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A
PRACTICAL TREATISE
ON THE
DISEASES OF THE LIVER
AND
BILIARY PASSAGES.

BY
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ALSO,
CLINICAL ILLUSTRATIONS
OF
DISEASES OF THE LIVER AND SPLEEN.

BY
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PREFACE

TO THE AMERICAN EDITION.

THE work of Dr. Thomson is a good measure of the state and fashion of medical investigations at this time. It evinces pathological precision in the history of the several diseases and disorders of the liver, of which the most essential characters only are given; with, at the same time, a rational scepticism on many reputed diseases of this gland, which are really dependent on disorders of the stomach, duodenum, and the other parts of the intestinal canal. All this is in strong and advantageous contrast with the speculations and hypothesis respecting the alleged importance of the liver in a great many affections, in whose origin and continuance it had no share, and for whose removal it need not and ought not to be specially acted on by remedies.

The cautious induction from well ascertained facts of the real value of different modes of treatment cannot but be a useful lesson in itself, and indirectly serviceable as an example for conducting inquiries into other organic affections. More especially is this spirit evinced in the author's inquiries into the remedial value of mercury, which, it ought to be known, especially to American and English practitioners who so often forget the fact, is not always applicable to nor useful in phlegmasiæ and other diseases of the liver. Mercury, if administered in hepatitis and other morbid states of structure and function, must be for good or evil: its effects are never of a negative kind; and the chances are more than equal of its being positively deleterious in a majority of the cases in which it is so lavishly prescribed. The writer of this well remembers his feelings of pity, bordering on contempt, for French writers, and more particularly for the author, M. Portal; whose work he was then reading, in Paris, some twenty years ago, on discovering that they could describe what they deemed to be a rational and a successful practice in liver diseases, without invoking the aid of mercury. Subsequent observation and more enlarged experience have long since induced him to do them more justice; and he is ready to say, with Dr. Thomson, who had just before remarked on the mercurial treatment of hepatitis never having come into favour in the continent of Eu-

rope:—"We are not aware, however, that there any grounds for believing that the treatment of the inflammatory affections of the liver pursued on the continent of Europe is less successful than that employed in this country; and even could it be shown that such were the case, it would still remain to be determined whether this difference in the result of practice was attributable to the less vigorous employment of the ordinary antiphlogistic means of treatment, or to the neglect of mercury."

Desirous of giving such a view of hepatic diseases and disorders as should embrace those in warm climates, in addition to the carefully recorded summary of their nature and occurrence in temperate regions, as furnished in Dr. Thomson's admirable treatise, it has been thought advisable to enrich the present volume with the essays of Mr. Twining, of Bengal. These are on diseases both of the Liver and the Spleen; and being of a clinical character they cannot fail to be specially instructive and available to the student and practitioner of the Southern and Western States. Mr. Twining's experience is also adverse to the lavish and routine administration of mercury in 'bilious disorder' or 'hepatic derangements,' real or supposititious. He does not believe in any uniform controlling power of mercury upon the secretion of the liver. His criticism on the abuse of calomel in the treatment of diseases of children in India, on the plea of their depending on hepatic derangements, is but too applicable to a prevalent practice in the United States. "Although," he says, "the absolute necessity of employing calomel in the treatment of some stages of many of the acute diseases of children in this country [India] is acknowledged, it is lamentable to observe the vast injury that is inflicted on numbers of these poor, pale, unhealthy creatures, by the calomel discipline intended to rectify the state of the then biliary secretion, at the time that their systems are suffering from extreme debility and anemia, and when the power of the constitution to form healthy red blood is still farther impeded by the use of mercurials."

Although we are as yet but imperfectly acquainted with the functions of the Spleen, yet the frequency of its diseases and their origin, so often identical with those of hepatic diseases, as well as their connection with congestive fever, are so many causes why we should gratefully receive contributions on these heads of so valuable and clinical a nature as those given by Mr. Twining in the essay which concludes the present volume. Of the entire volume as now arranged and published for the first time, we are safe in saying, that it is one unequalled on the prime subject of which it treats, viz., Morbid States and Functions of the Liver and the Means of Cure.

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DISEASES

OF

THE LIVER AND BILIARY PASSAGES.

CHAPTER I.

OF THE CHANGES IN FUNCTION AND STRUCTURE TO WHICH THE BILIARY ORGANS ARE SUBJECT.

SECTION I.

FUNCTIONAL DERANGEMENTS OF THE BILIARY ORGANS.

1. As the peculiar functions of the Liver and its appendages, the Gall-bladder and the Gall-ducts, consists in the secretion and excretion of the Bile, the functional derangements of these organs must necessarily be referrible to an increased, a diminished, or a vitiated secretion of that fluid ; or to its impeded, altered, or deranged excretion. These various disturbances of the functions of the biliary organs may, there is reason to believe, occur independently of any perceptible alterations in their structure, constituting what may perhaps with most propriety be denominated their *dynamical* derangements ; or they may occur as consequences of, or at least in combination with, obvious *structural* alterations.

2. But whilst the bile may undergo various morbid changes in its quantity and in its qualities, without any apparent disease of its secreting organ, on the other hand, this fluid may present, to all appearance at least, its natural characters, and be found in its usual quantity, in cases in which there exists extensive structural alteration of the liver. "I have several times," says Dr. Malcolmson, "seen a free, and even copious and healthy secretion of bile, when great part of the viscus was destroyed by suppuration, the remaining portion of the gland appearing then to take on an increased action."

MORBID BILIARY SECRETION.

3. So far as our knowledge of the process of glandular secretion, as a natural operation of the animal economy, at present extends, it seems reasonable to infer that the morbid exercise of this function, or, in other words, the production of a secreted fluid, differing, in respect of quantity or of quality, from the healthy standard, must depend on pathological conditions, either, 1st, of the blood, out of which the secretion is formed; or, 2d, of the secretory apparatus of the gland, by which those processes are effected on which the formation of the particular fluid depends; or, 3d, of the nervous system, as exercising, both organically and mentally, an influence over glandular secretion; or, 4th and lastly, of other organs, more or less remote, which exert an influence over the particular secretory apparatus, either directly or through the medium, as it is said, of sympathetic connexions.

4. Whatever view we may take of the nature of the process of secretion in general, or of that of bile in particular, we can easily conceive that the *blood*, varying, as we know it to do, in its constitution, under a variety of circumstances with which we are very imperfectly acquainted, may at one time contain more, and at another time less, than a due share of the chemical principles which enter into the composition of bile. We can suppose, likewise, that, without any change in the constitution of the blood, the quantity of that fluid, capable of furnishing bile, which reaches the liver, and the length of time during which it remains there, may vary; and that variations of the circulation, in these respects, may exert a considerable influence on the amount of the biliary secretion.

5. As to any changes in the condition of the *secretory apparatus* of the liver, which can be supposed capable of modifying the amount or character of the biliary secretion, the only notions of such changes which we are able to form, rest on the idea of secretion being, more or less, a process of filtration. Under certain circumstances, we find that the blood passes through the secretory apparatus, little if at all changed; and this so far favours the idea that there may be various modifications of the state of that apparatus, in which the amount of filtration, to which the blood is subjected in passing through it, will vary; and that, from these modifications, consequently, may result variations in the physical and chemical qualities of the bile.

6. Without insisting on the general physiological doctrine of the dependency of glandular secretion upon the *nervous system*, whatever the nature of this dependency may be supposed to be, we may remark that there is a variety of pathological phenomena which lead to the recognition of an organic influence exerted by the brain over the biliary function in particular,* but neither in

* Andral admits (*Clinique Medicale*, iv. 494) "que sous l'influence de certaines modifications du système nerveux, le oie peut etre altéré dans son mode de secretion."

respect of this influence, nor of that exerted by the same system as the organ of the mind, over this function, is it always very clear whether it is the secretion or the excretion of bile that is primarily affected by it.

7. Physiology seems to show, that, of the organs not immediately concerned in the secretion or excretion of the bile, the *duodenum* is the one, the varying conditions of which have the most considerable influence on the biliary function. The flow of bile from the gall-ducts into the duodenum in the state of health, is not constant, but occasionally only, depending on the presence of certain kinds of foreign matters in that portion of the intestinal canal. The flow consists immediately in *excretion*; but it seems probable, from analogy with the mammary secretion, that when excretion is interrupted by any cause, secretion will be more or less arrested; and, on the other hand, that when excretion goes on with more than usual activity, a corresponding impulse will be given to secretion. Hence we can suppose, that, under various morbid conditions of the duodenum, producing increased or diminished facility or rapidity of excretion, the biliary secretion may be affected at least in respect of quantity.*

8. Before noticing more particularly the several morbid modifications of which the biliary secretion is susceptible, we may remark, that a belief in the very frequent occurrence of such modifications, and in their exerting a very powerful influence in producing deranged conditions of the function of digestion, has led to the general recognition, on the part of medical men and of the public, of a class of maladies termed Bilious, without much pains having been taken to define the precise signification in which that term ought to be understood. Some physicians seem to comprehend under it those derangements of the digestive organs only in which the bile is, or is conceived to be, in excess; others those in which it is deficient, or of morbid quality; and some again extend it to all derangements of the digestive organs in which the biliary secretion is morbid, whether in respect of quantity or of composition. Nor, perhaps, in the application of the term Bilious to derangements of digestion, has much pains been taken to ascertain the actual existence of deranged biliary secretion in the particular cases so designated, or their real dependence upon it. For bilious disorder and deranged digestion seem, not unfrequently, to have been used as synonymous and co-extensive terms, as if a due excretion of healthy bile were the only condition on which the exercise of

* Since writing the above, we find in Lorry's *Treatise de Melancholia*, a division of the causes which produce what he calls *vitelline bile* (which he considers as the first degeneration of that fluid), corresponding very closely with that which we have here proposed. "*Causæ illæ ad quatuor capita reduci possunt. 1º, Sanguinis vitia. 3º, Hepatis atque organorum, bilis tum secretioni, tum asservationi inservientium. 3º, Contentorum in stomacho et intestinis. 4º, Demum causarum qualiumcunque in reliquis corporis partibus habitantium concursus.*" P. 240.

digestion depends; which condition being disturbed, digestion must be deranged; and the reality of the disturbance of which may unequivocally be inferred from the derangement of digestion. We need seek for no more striking proof of the very general prevalence of this pathological theory of indigestion, viz., that "the essence of the disorder resides in the liver," as has been said by one of its supporters, than the almost universal adoption, in the treatment of that class of maladies, of a remedy, the beneficial action of which is supposed to depend mainly on its being capable of bringing the liver to a healthy state of secretion. But when we consider how very complicated a phenomenon digestion is, it becomes apparent that there must be many other causes of its derangement besides disturbance of the biliary secretion; and that, consequently, some more positive proof is necessary of such disturbance, than the mere occurrence of indigestion. "It must be acknowledged," said the late Mr. Twining, in his *Clinical Illustrations of the more important diseases of Bengal* (I. 207), "that the presence of functional disorders of the liver is often assumed to exist, on very vague and trivial grounds; and modes of treatment are adopted, in consequence of some imagined affection of the liver, which are not only unnecessary, but, it is to be feared, sometimes absolutely injurious. The uncertainty of the results of treatment pursued on such grounds, is much to be lamented. I trust we shall not meet many practitioners in the present day who are satisfied, without any distinct evidence on the subject, to ascribe every obscure chronic disease to some functional disorder of the liver, and who suppose they are acting on reasonable principles, while they injure the patient's constitution by persistence in the use of mercury."

DIMINISHED BILIARY SECRETION.

9. That the secreting operation of the liver, like that of other glandular organs, as the kidney, the testicle, &c., may, under certain circumstances, independently of structural alteration, go on with less than its usual activity, and that the bile may consequently be deficient in quantity, is on many accounts very probable, though it may reasonably be doubted whether this be so frequent an occurrence as is usually supposed. We are far from possessing the same facility in judging of the manner in which the *liver* exercises its secretory function, that we possess in respect of the *kidney*. The only positive means, indeed, by which we can ascertain, during life, the occurrence of a deficient secretion of bile, — implying, where no structural disease is present, the existence of what is called by some pathologists *torpor of the liver*, — is our finding that the alvine evacuations are, in a greater or less degree, destitute of the colour which they receive from this fluid — are more or less pale, or of a dull white or ash colour, without this state of the stools being accompanied with the occurrence of any

phenomenon which could warrant us in inferring the existence of obstructed biliary excretion.

10. The frequent observation of a simultaneous return of the stools to their natural colour, and of the function of digestion to its healthy exercise, has been alleged as an unquestionable corroborative proof of the dependence of disordered digestion, in many instances, on the deficient secretion of bile. Although, however, a connection between the two processes appears to be thus established, it does not seem to be very clearly shown whether the deficiency of bile should be considered as in all instances the cause, or whether in some, at least, it may not be the effect of the disordered digestion; nor whether the remedies found beneficial in such cases, restore the function of digestion to a healthy condition by re-establishing the secretion of bile, or re-establish the secretion of bile by restoring a proper condition of the stomach and of the intestinal canal.

11. There is a class of cases of great interest, in which some pathologists are disposed to believe that there occurs not only a diminution, but a suspension or suppression, of the biliary secretion. In the cases in question, jaundice occurs, although, on *post mortem* examination, it appears that there does not exist any perceptible disease of the liver, nor any obstruction to the flow of bile from the extremities of the biliferous tubes into the duodenum, the bile-ducts being not only not turgid, but absolutely empty of bile. Hence it is argued, that the jaundice cannot be in these, as it is in most instances, the effect of a re-absorption of secreted bile, itself dependent on the non-excretion of that fluid, but must be owing to the non-separation, from the blood, of the elements of which the biliary secretion is composed.

12. These cases, accordingly, are adduced among the proofs of the revived physiological doctrine, that the products of secretion are not *formed* in their appropriate organs, but merely *evolved* or *separated*, in these organs, from the blood in which they exist ready formed, or, at least, in an advanced state of preparation. By the advocates of this explanation, an analogy is conceived to exist between the affection in question, and that of suppressed secretion of urine. In both classes of cases, the mode of death by supervening coma, seems to indicate the action of a poison on the nervous system. In cases of suppressed urinary secretion, or Ischuria Renalis, urea is detected in the blood, as it is also in animals whose kidneys have been extirpated. In cases of Jaundice, there can exist no doubt as to the presence in the blood, of the peculiar biliary principles.

13. To account for the speedily fatal termination of cases of jaundice in which there does not exist obstruction to biliary excretion, as compared with the slow course, and, in many instances, favourable result of those which depend on such obstruction, Dr. Alison has very ingeniously suggested that the economy sustains more injury from the biliary principles not being separated from

the blood at all, than from their re-absorption, subsequently to their separation; and in this fact, again, he finds an additional point of analogy between this form of jaundice and renal ischuria, which is a much more severe affection than that produced by the re-absorption of the urine into the system, after its having been secreted. (Edin. Med. Surg. Journ. vol. xlv.)

14. When either deficient or suppressed biliary secretion occurs as a dynamical affection, on which of the several pathological conditions formerly noticed (3) can it be supposed to depend? This is a question to which we are probably still far from being able to give a satisfactory reply.

15. Have we reason, in any instance, to suppose that deficient biliary secretion depends upon the constitution of the *blood*,—upon its being deficient in the biliary principles? In this event, we should expect that the bile, in being absent from its usual, would not be found in any unusual, situations. White stools, without jaundice, might, therefore, be supposed indicative of such a deficiency of the biliary principles in the blood; but this combination of symptoms is said to have occurred in cases not of suppression, but simply of retention of bile (56), so that it cannot be absolutely relied on.

16. Can we suppose the non-secretion of bile to depend on any altered condition of the minute vessels of the hepatic *secretory apparatus*, such as the state of spasm, which was supposed, in the doctrine of Hoffmann and Cullen, to account for the cessation of a number of the secretions in the state of fever, &c.? May not the distention of the biliary ducts by bile, mucus, or other fluid, impede the secreting action of the liver?*

17. What is the *modus operandi* of injuries of the *brain* in producing jaundice? Is it by affecting the secretion or the excretion of the bile? and, if by affecting the secretion, Is it by diminishing or increasing this? In the same way, in the influence exerted by the *mind* over the biliary secretion, have we any grounds for believing that any of the passions, or any degrees of particular passions, cause a diminution or suppression of the biliary secretion? These are points respecting which many dogmatic assertions stand recorded, but with very little pains having been taken to establish these assertions on rational evidence.

18. Are there any morbid conditions of the *duodenum* which cause a diminution or suppression of the biliary secretion? Dr.

* "Si extremitates secretoriæ, vel nonnullæ vel omnes, venæ portarum," says Walther, "vel sanguine tenace, viscido, partibus terreis mixto, infarctæ, vel per spasmus convulsivum contractæ sunt, tunc non adeo multum vel fere nihil bilis secernitur, et in vesicam felleam ducitur; reliquæ particulæ biliferæ sanguini venæ portarum innatantes, per ramos anastomoticos cum vena cava sanguini univervo admiscentur; arteriæ inde sanguinem accipientes biliosum, secernunt liquida biliosa," &c. Annotationes Academicæ; Berolini, 1786, De Hepate, p. 108. Walther attributes to similar obstruction of the hepatic extremities of the vena portarum, the production of infarction of the liver, and the cessation of the biliary secretion which accompanies it. P. 109.

Saunders was disposed to believe that a diminished secretion of bile is frequently the consequence of an original mischief in the stomach and duodenum, causing the sympathetic action on the liver to be less than that on which healthy secretion may depend. (Treatise on the Liver, p. 191.) According to some pathologists, when there exists irritation of the stomach and duodenum, or gastro-duodenitis, the liver partakes of this, sympathetically, and, as a consequence, the biliary secretion is arrested. But is *irritation* of the alimentary canal never alleged to play a very opposite part, relative to the biliary secretion, to that of causing its *diminution*?

19. According to Mr. Annesley, the great cause of torpor of the liver is, diminished or exhausted energy of the secreting function of the organ, which may gradually superinduce, and become complicated with, accumulation of bile in the biliary ducts and gall-bladder, and with congestion in the bloodvessels of that organ: And he represents the vital energy of the hepatic apparatus as being exhausted in consequence of dissipation, drunkenness, and other causes. (On the Diseases of India, I. 366.) But the employment of such phrases as vital energy of hepatic apparatus, and diminished or exhausted energy of its secreting function, obviously throw no light on the nature of the changes which actually occur, either in the healthy or morbid exercise of biliary secretion.

20. A deficiency of the biliary secretion is the functional derangement which we should expect most usually to accompany structural alterations of the liver, seeing that in many of these alterations, portions of that organ are more or less completely destroyed, or altogether removed. But, as already hinted, experience seems to show that, in many cases at least, the biliary secretion is carried on to its usual, or perhaps to an increased amount, when, to all appearance, there exists very extensive disorganization of its organ. It is alleged, however, that when the gall-ducts, in consequence of disease in themselves or in the adjacent parts, become impervious, so that the bile can no longer be discharged into the intestinal canal, the secretion may cease, as being no longer subservient to any purpose. Such a cessation we may suppose to depend either on the stimulus necessary to secretion being no longer conveyed from the duodenum to the secretory apparatus of the liver (7. 18), or on the pressure of the retained bile upon that apparatus (16).

EXCESSIVE BILIARY SECRETION,

21. That the secretion of bile is liable, under particular circumstances, to become excessive in quantity, and that various affections of the alimentary canal, such as bilious diarrhœa and cholera, *originate* in this excessive secretion, is another opinion which has very generally prevailed. Of the occurrence of an excess, as of a deficiency of the biliary secretion, our principal means of judging,

during life, must be derived from the appearances, and particularly from the colour, of the alvine evacuations; and there seems to be reason for doubting whether this mode of judgment be not exposed to some sources of fallacy, to which sufficient consideration has not at all times been paid, such as, that a small quantity of bile may be diluted with fluids in the intestinal canal, so as to produce the appearance of copious bilious evacuations; or that other matters may, from their resemblance to the bile in some of its morbid conditions, be mistaken for that fluid, when, in reality, they are of a very different nature, as when they consist of blood more or less altered. "It is probable," observes Dr. Abercrombie, "that the bile may be increased in quantity, but it must at the same time be admitted, that our prevailing notions on the subject are rather hypothetical than founded on facts." "I am not aware of any test by which we can judge with precision of its redundancy (in the alvine evacuations); and I must confess my suspicion that the term bilious stools is often applied, in a very vague manner, to evacuations which merely consist of thin feculent matter mixed with mucus from the intestinal membrane."

22. But whilst in judging of the occurrence of increased biliary secretion, from the appearance of the alvine evacuations, it is proper to keep these sources of fallacy in view, it cannot be denied that post-mortem examination frequently affords demonstrative proof of such a state of the secretion having existed. M. Andral remarks that, in a considerable number of dissections, he has been "particularly struck with the prodigious quantity of bile which filled the intestinal canal in persons who had experienced during life a copious diarrhœa. The liver, in this case, does not present any appreciable lesion, but is only gorged with bile. As to the intestinal canal, it is sometimes severely affected, its mucous membrane being inflamed, disorganized, and ulcerated; but sometimes, on the contrary, it presents no other appreciable lesion than a slight injection of the vessels running in the mucous membrane or beneath it; so that, if, in the first case, we might say with M. Broussais, that the bilious flux has been consecutive to the intestinal irritation, this connection is no longer so clear in the second case."

23. In admitting the occasional occurrence of an excessive biliary secretion, it does not follow that we must, as a matter of course, regard such excess as the proximate cause of the various nosological diseases in which it takes place; for increased, as well as diminished, secretion of bile, instead of being the first deviation from the state of health, may be only a consequence of some morbid state previously induced; and it is necessary to be cautious in judging which, among the various symptoms that present themselves in such diseases, actually depend on the excess of bile.

24. As to the pathological conditions on which excessive biliary secretion may depend (3), it seems very probable, in the first place, that it frequently originates in an altered state of

the *blood*; seeing that the remote causes, under the operation of which it manifests itself, are such as may be supposed to affect the qualities of this fluid. Thus, it is very generally alleged, that an increased biliary secretion occurs as a common consequence of an elevated atmospheric temperature, whether this shall be dependent on the season of the year, or on the region of the globe.* Considerable ingenuity has been displayed in accounting for this alleged fact, and more particularly for the occurrence of an increased secretion of bile in natives of a temperate, coming to be exposed to the influence of a hot climate; such an increased secretion, indeed, being conceived by some physicians to be the immediate cause of all the derangements in health that are experienced by persons on first making this transition.

25. According to one hypothesis, the increased secretion of bile in hot climates depends on a sympathy, or synchronous action, subsisting between the extreme vessels on the surface of the body, and those of the vena portarum in the liver. Dr. Johnson, by whom this explanation was suggested, has adduced a number of illustrations of the connection which he believes to exist between the perspiratory and biliary secretions. These seem to him to show, that where there is an increase or a diminution of the one of these secretions, there is a corresponding change in the other; and he affirms that, on a first arrival between the tropics, the perspiration and biliary secretion are both increased, but that, as the person becomes habituated to the climate, they both decrease, *pari passu*.

26. According to another hypothesis — that maintained by Mr. Annesley, — the increased secretion of bile alleged to occur in persons passing from a temperate to a warm climate, depends on a vicarious connection between the liver and the lungs, in virtue of which one or other of these organs is able, to a certain extent, to perform the function of the other. It has been found that the quantity of carbonic acid gas formed in the process of respiration, in a given time, is much diminished by a high temperature and by other circumstances, which, as it is said, lower the powers of life. Hence, the excess of carbon must be carried off by some other channel; and, as bile is chiefly formed of carbon and hydrogen, an increased secretion of this fluid will guard the system against that superabundance of the former of these substances which must otherwise arise. Such, accordingly, is supposed to be the final cause of the increased secretion of bile alleged to occur in hot climates; and it is conceived that a similar explanation may be given of the operation of some of the other causes from which an excessive secretion of bile

* Some doubts have been expressed by very respectable authorities, as the late Dr. John Hunter and Mr. Marshall, respecting the correctness of this opinion; but it must be admitted to be the prevailing belief among the practitioners of the East and West Indies, and of other hot climates.

arises, such as sleep, the depressing passions of the mind, fatigue, the use of vinous and spirituous liquors, &c., viz. that their primary effect is to diminish the quantity of carbonic acid gas formed in respiration.

27. The theory last mentioned obviously implies, that the excessive secretion of bile occurring as a consequence of high atmospheric temperature has its origin in the condition of the blood, as containing a larger proportion than usual of the constituent elements of that substance, the presence of which elements may be supposed to stimulate or urge the liver to excessive action. Whether there be any other circumstances, besides those already enumerated, in which such a state of the blood is engendered, and particularly how far this may happen under the influence of particular kinds of diet, and more especially the plentiful use of an animal diet, seems to be a matter well worthy of investigation. Whenever jaundice occurs, without there being a deficiency of bile in the stools, it seems reasonable to infer that there must exist, in that particular instance, a redundancy of the biliary principles in the blood.

28. But, independently of altered conditions of the blood itself, increased biliary secretion may very probably proceed from altered states of the hepatic circulation. Thus, the biliary secretion is said to be excessive in sanguineous congestion, and in the commencement of inflammation, of the liver.

29. It does not seem easy to conceive any altered condition of the hepatic *secretory apparatus* itself which should give rise to an increased secretion of bile.

30. Have we reason to believe that any particular states of the *nervous system*, or that any of the mental emotions, give rise to an increased secretion of bile? That a fit of passion is liable to be succeeded by a fit of jaundice, is well known; but of the precise mode of connection between these two phenomena, and particularly whether an increase of the biliary secretion is one of the intermediate series of phenomena, we suspect that very little is understood.

31. As to the relation of increased biliary secretion with the condition of the *intestinal tube*, excess of bile has usually been supposed rather to give rise to, than to depend on, deranged action of the alimentary canal, as in the production of bilious diarrhœa and of cholera.

VITIATED BILIARY SECRETION.

32. That the bile is liable, like its kindred secretion the urine, to undergo various modifications in respect of its constitution, is shown by the diversities which it exhibits in its physical characters, particularly as it is found in the gall-bladder and ducts in post-mortem examinations, and has been farther confirmed by the results of chemical analysis, so far as chemistry has yet been ap-

plied to the investigation of the pathological conditions of this fluid. It is obvious, indeed, that the variations in the physical qualities of the bile, should be regarded by pathologists only as encouragements to prosecute their inquiries into the variations liable to occur in its chemical composition; that what has been done, in this respect, for the renal, should be done likewise for the hepatic secretion. But before we can hope to obtain correct notions of the pathological alterations to which the bile is liable, we must possess an accurate knowledge of its healthy composition. There is far, however, from being a correspondence in the views of chemists on this subject; so that, for instance, while by one chemist (Thenard) the substance named picromel is not recognised as an element of human bile in its healthy state, by another (Chevallier) it is esteemed as such, and its absence is regarded as a consequence of disease.

33. The opinion which was entertained by the older physiologists relative to the chemical constitution of the bile, is very distinctly set forth by Dr. Coe, in his *Treatise on Biliary Concretions*, published in 1757. "That the bile is of a saponaceous nature, appears," says he, "by a plain experiment known to the vulgar, that is, the use of the gall of oxen in washing linen, scouring wool, &c., where, like soap, being mixed with water, it helps to wash out grease and other stains, which the water alone could have little or no effect upon. And soap, we know, is made of oil or fat, and a strong lixivium of fixed alkali salts, incorporated together by boiling into a due consistence." The results of some experiments on the constitution of bile that were performed by M. Cadet, and of which an account was published in the *Memoirs of the Academy of Sciences* for 1767, led that chemist to the conclusion, "that the bile is a true soap, composed of an animal fat, and of the alkaline base of sea-salt; that it contains also a salt of the nature of sugar of milk, and a calcareous earth which is slightly ferruginous." He thought it probable that "the last two principles, together with the nature of the oily principle, are the causes of the bitterness and colour which the bile possesses, and which are not found in ordinary soap." (4th edition, p. 483.)

34. The more the bile was made the subject of chemical investigation, the more the number of its supposed peculiar constituents increased, each successive analyst adding one or several to the list of these given by his predecessors. Thus in the bile of the *ox*, which has been used in almost all the investigations, Gmelin's analysis gave no fewer than eleven peculiar substances. With regard to *human* bile, M. Thenard recognised two peculiar matters as entering into its composition, viz., resinous matter and yellow matter, but he did not admit picromel. Berzelius regarded these three matters as merely modifications of one substance, to which he gave the name of the biliary principle, that being the sole peculiar substance which he recognised as entering into the composition of this fluid. Tiedemann and Gmelin, again, have contended for the separate existence in human bile, of five distinct and

peculiar substances, viz., colouring matter, choline, resin, picromel, and oleic acid.

35. M. Demarcay, who has recently been engaged in analyzing bile in the laboratory of Professor Liebig, holds out a prospect of a simpler view of its constitution being again established. The professed objects of his memoir (*Annales de Chimie et de Physique*), are to support the opinion of the early chemists, respecting the saponaceous character of bile; to show that products of decomposition have often been considered as integrant parts of the bile; and that nine-tenths of this fluid, at least, consist of a true soap, with a basis of soda, that is easily decomposed and recomposed, and which hold in solution variable but always small quantities of a few other substances. "The physical characters of bile, its homogeneous constitution, its viscid consistence, its extreme solubility in water, its energy in retaining water or taking possession of it, and likewise the remarkable property it possesses of dissolving fats in large quantity, assimilate it so much to soaps," observes M. Demarcay, "that the early observers were right in classing it among them." The substance which, in combination with soda, constitutes the great proportion of the bile, is, according to M. Demarcay, a peculiar acid to which he gives the name of Choleic. "In the preceding experiments," says he, "we see constantly reappear a substance (viz., choleic acid), possessed of the same physical and chemical characters, and which always yields, by its decomposition, the same few and easily distinguished products. I have naturally been led to endeavour to reconstitute the bile, by recombining with soda the substance which I had separated from it. I have succeeded in obtaining a well-defined salt, possessing all the characters of bile and exhibiting the same reactions, and which has left, on calcination, exactly the same quantity of soda. Treated by acids, alkalis, and the salts of lead, this recombination is affected like bile; the analogy between these two substances is such, therefore, that it is impossible to avoid regarding them as one and the same compound." "On an attentive perusal," he adds, "of the works that have been published on the composition of the bile, we see at every instant this particular acid (the choleic) reappear, either isolated and almost pure, as in the biliary resin of Berzelius; or more or less decomposed, as in that of Thenard and Gmelin. The decomposition of the bile is so simple and clear, that it is impossible, after having seen it, not to recognise in the biliary resin and taurine of Gmelin, products of decomposition." Of picromel, M. Demarcay says, that "it is nothing but bile, which, from causes easily assigned, has not undergone precipitation by the reagents employed," viz., the salts of lead. There are three products of the decomposition of choleic acid, which M. Demarcay has particularly investigated; 1st, an unazotised solid substance, which he calls choloidic acid; 2^d, an azotised substance, consisting of white and transparent prismatic crystals, named by Gmelin, taurine; and, 3^d, a crystallizable acid, soluble in ether, which he

believes to be identical with what Gmelin described under the name of choleic acid.

36. Which ever of the statements above referred to, as to the chemical composition of the bile, may ultimately prove to be correct, it is obvious that this fluid may be considered as consisting of two classes of constituents; 1st, those which are met with only in itself, and on which its peculiar qualities mainly depend; and, 2d, those which enter into the composition of animal fluids, secreted by other organs besides the liver. The view which has been taken of the diversified opinions of chemists, show how little we are able to say what substances should be comprehended under the *first* of these classes. Under the *second* there fall to be included, water with various salts of soda, and some other saline ingredients, and a small proportion of mucus or albumen.

37. With respect to the variations which the bile, as found after death in the gall-bladder and gall-ducts, exhibits in its physical qualities, these, so far as yet observed, relate chiefly to its consistence and its colour. In point of *consistence*, the bile found in the gall-bladder varies in every degree from that of water or serum to that of an inspissated juice or of pitch. In point of *colour*, it exhibits the various shades of yellow, green, brown, and black.

38. These variations in the consistence and in the colour of the bile, may be supposed to depend (a) on simple variations in the proportion of its natural elements; or (b) on the absence of one or more of these; or (c) on the presence of elements which it does not usually contain, such as, according to the experiments of Chevreul on morbid bile, cholesterine, margaric acid, oleic acid, &c.

39. Increase of the bile's consistence probably depends; in most cases, on an increase in the quantity which it may contain, of mucus or albumen, separately or conjointly, and perhaps in various states of combination or modification.

40. Variations in the colour of the bile must depend on the proportion of colouring principle contained in a given amount of fluid, or on combinations which this colouring principle may have formed with elements not usually present. The various tints which the bile exhibits, from very light yellow through the deeper shades of this colour, into brown and black, probably depend chiefly on the degree of dilution of the colouring matter; whilst various experiments that have been made on the effect of the addition of acids to the bile (afterwards to be more particularly noticed), render it probable that when this fluid exhibits a green colour, it is to the addition of an acid that this is attributable.

41. The two deviations of the bile from its ordinary physical appearances which have attracted most attention are, *first*, that in which it presents a very dark or black hue; and, *second*, that in which it is of a very pale colour, almost white.

42. *Black* bile, as found in the gall-bladder, varies very much in

its consistence, bearing sometimes a resemblance to common writing ink, sometimes to printer's ink, and sometimes being so viscid as to receive the appellation of pitchy. Whether blackness of the bile always depends on the same cause, is a point respecting which, we suspect, little is as yet known. In a case in which Dr. Powell examined bile of a remarkably deep and almost black colour, but which was of its ordinary fluidity, he found it to contain a quantity of the peculiar crystallisable matter of which biliary concretions are formed, that is, of what is now called cholesterine. In a specimen of bile unusually thick and tenacious, and of a nearly black colour, examined by Dr. Bostock (Dr. Bright's Reports, i. 113), he found it to contain a large quantity of what was either a combination of albumen and mucus, or a substance intermediate between them; and this was intimately united with the proper biliary matter, which was of a peculiarly dark colour. "Black bile," says Mr. Marshall, "becomes yellow by dilution with water; hence the blackness of bile appears to arise from a concentration of the ordinary colour of the secretion. The mere darkness of the tinge of bile, therefore," remarks this sagacious observer, "does not seem to be an indubitable proof that it is of an offensive quality."

43. The consistence of *pale* bile seems also to vary considerably, though perhaps it never reaches the same degree of viscosity as the black. It is described sometimes as resembling serum, sometimes as rather more tenacious than serum, sometimes as a watery or albuminous fluid, and sometimes as ropy, and, in its physical qualities, exactly resembling the white of egg. Sometimes it is of a bright light orange colour; sometimes it is tinged with a slight yellowish colour; sometimes it is almost pellucid, and sometimes it is perfectly transparent and colourless. Drs. Graves and Stokes mention (Dubl. Hosp. Reports, v. 108), that in two specimens of bile of this kind examined by them, they found that, notwithstanding its resemblance in physical qualities to the white of egg, it contained no albumen, as was proved by the application of heat, and that it was not soluble in hot or cold water; in fact, that it was pure mucus. But in a specimen examined by Dr. Bostock (loc. cit.), by applying heat, and the appropriate chemical reagents, it appeared that the greatest part of the animal matter contained in it was albumen, probably united to a little mucus, with which was mixed a small quantity of the substance which gave the fluid its peculiar colour. Bile of these characters must not be confounded with a secretion from the internal surface of the gall-bladder, which may, under certain circumstances, accumulate in its cavity.

44. Another morbid appearance, occasionally presented by the bile, is, that, in place of its being a homogeneous fluid, particles of solid matter, of greater or less consistence, and of larger or smaller dimensions, are found floating in it, or deposited from it. The occurrence of such appearances is interesting, as connecting the morbid conditions of the bile with the formation of biliary con-

cretions. Dr. Bostock mentions a specimen of bile,—rather lighter coloured and more tenacious than ordinary, as if containing an unusually large quantity of mucus, but without any indication of albumen,—through which were diffused a number of black particles that very slowly subsided. It was not easy to separate these particles from the fluid, on account of its viscosity and their minuteness; but he was led to conclude that they consisted of small portions of the resin of bile, in an extremely indurated state.

45. As connected with variations in the physical and chemical constitution of the bile, we may here notice the composition and mode of formation of those concretions usually termed gall-stones, which, as is well known, are very frequently met with in the different portions of the biliary passages. In respect of their *chemical composition*, the proper biliary concretions or gall-stones have been referred to four heads, according as they are composed, *1st*, of the yellow matter of the bile; or, *2d*, of the resinous matter; or, *3d*, of picromel; or, *4th*, of cholesterine. Their most usual constituents, according to Chevreul, confirmed by the late Dr. Turner who had given much attention to the subject, are the yellow colouring matter of the bile and cholesterine, the latter predominating, and being sometimes in a state of purity. Sometimes, according to these chemists, gall-stones contain a portion of inspissated bile; and, in some rare instances, the cholesterine is wholly wanting. According to Cruveilhier, some biliary calculi are entirely formed of cholesterine; others of mucus and inspissated yellow matter or resinous matter; and many of them contain, at the same time, cholesterine, yellow matter, and resinous matter. Most cholesterine gall-stones have concretions of inspissated bile for their nuclei.

46. With regard to the *formation* of these concretions, there seem to be two principal modes in which this is effected. *First*, In those cases in which the biliary concretions consist merely of inspissated bile and mucus, their formation may be dependent either on original spissitude of the secretion, or on such a detention of healthy bile, in some part of the gall-passages, as favours the absorption of its watery constituents. But, *second*, In those cases in which cholesterine is the principal constituent of biliary concretions, we must suppose the bile in which they have formed to have differed from its natural constitution, either in containing this principle in excess, or, as has recently been suggested by Muratori, in being deficient in the element (*viz.*, soda), on which the solution of cholesterine in the bile depends. (See Brit. and For. Med. Rev. vi. 248.) Dr. Bright mentions as a fact which has been confirmed to him by several observations, that the bile is very apt to undergo that change which leads to the deposit of concretions of adipocire in the gall-bladder, in patients labouring under scirrhus, as females with scirrhus mamma, for instance, whether the disease has or has not attacked internal organs.

47. But, besides proper gall-stones, or concretions formed at the expense of the bile, it is alleged that there are occasionally found

in the gall-bladder, concretions of phosphate of lime. M. Andral, who states that he has twice met with concretions of this kind, remarks, that, in both instances, there existed obliteration of the cystic-duct, which must, for a length of time previously to death, have prevented the bile from reaching the gall-bladder; and it was in the midst of the mucus contained in that cavity, that the concretion of calcareous phosphate had formed. (*Anat. Pathol.* ii. 615.)

48. Independently of the evidence of the liability of the biliary secretion to become morbid, which is derived from its physical characters and chemical analysis, a similar inference has been deduced from noxious effects said to have been produced by the inoculation of living animals, with bile taken from animals dying under certain forms of disease; whereas, under ordinary circumstances, no injurious consequences arise from such inoculation. That, in particular cases, bile transferred from one animal body into another operates as a poison, though mentioned by M. Andral (*loc. cit.*), as a matter of common observation, seems to rest chiefly, if not entirely, on a statement made by Cicognini, a surgeon of Forli, to Morgagni, (*Epist. lix. § 18*), viz., that he had found in the stomach and intestines of the son of a painter, who had died in most violent convulsions, emaciated and extenuated by a tertian fever, a green bile, which gave a violet tinge to the scalpel, and which was so poisonous that two pigeons, which were pricked with the instrument, died shortly afterwards in convulsions; and a cock which swallowed a piece of bread mixed with the bile, also died in a similar manner. This statement (which is quoted by M. Roche, as proceeding immediately from Morgagni himself, and is attributed by M. Littré to Mascagni) cannot certainly, without corroborative evidence, be admitted as establishing the occasionally poisonous qualities of bile.* We are not aware of any experiments having been made to ascertain whether any of the ordinary or preternatural constituents of the bile singly, and consequently in its highest degree of concentration, acts as a poison on the animal economy.

* The experiments performed by Deidier during the Marseilles Plague of 1720, in which it was found that this disease could be produced, by introducing into healthy animals bile taken from subjects that had died of it, were relied on by that physician as a proof that the disease was not contagious, but originally bred in the body by the corruption of the bile; and they have frequently been referred to as illustrative of a vitiated state of that fluid. But, admitting the accuracy of the experiments, "it does not hence follow," as Dr. Mead has justly remarked, "that the bile is the seat of the disease, or that other humours of the body are not corrupted as well as this. I make no question but the whole mass of blood is, in this case, in a state of putrefaction, and consequently that all the liquors derived from it partake of the taint. Accordingly it appeared afterwards from some experiments made by Dr. Couzier, that not only the blood, but even the urine from an infected person, infused into the crural vein of a dog, communicated the plague. I will venture to affirm, that if, instead of bile, blood, or urine, the matter of the ulcers had been put into a wound made in the dog, it would have had at least an equally pernicious effect, as may well be concluded from the inoculation of the smallpox." — *Of the Plague.*

49. If we know little of the pathological conditions upon which variations in the *quantity* of the biliary secretion may depend, less, if possible, do we know of the conditions which give rise to changes in its *qualities*. It seems probable that these may depend, in some cases, on a peculiar constitution of the blood, and in others on peculiarities in the circulation. Dr. Saunders alleges, that, "when a secretion is hurried by the excess of action, it seldom happens that the fluid secreted possesses its natural and healthy properties; hence arises," says he, "the variation in the appearance of bile, which, in some acute cases, as in Cholera Morbus, I have seen of a colour as black as soot, so as to resemble more the red particles of the blood, in a broken or diseased state, than the bile. Such a fluid may be considered as something between blood and bile, and carried off so quickly that the process of making bile is only just begun, though the change in the condition of the blood, with a view to that process, has taken place. This," Dr. Saunders adds, "could not have depended on any diseased structure, for it is removed by opiates, and other means, which may restrain immoderate action."

IMPEDED EXCRETION OF BILE.

50. The bile, subsequently to its secretion, may be prevented from making its way into the intestinal canal, by a variety of mechanical impediments of a *structural* kind, either originating in the gall-ducts, or produced in them by the pressure of neighbouring organs. These structural impediments will fall afterwards to be more particularly noticed. But cases occur likewise, in which, without any apparent structural change sufficient to account for the detention of the bile, the gall-bladder and the tubuli biliferi become distended with that fluid, while the appearance of the alvine evacuations proves that none flows into the intestinal canal.

51. To enable us to give a rational explanation of this phenomenon, it would be necessary to possess an accurate knowledge of the nature of the mechanism by which the bile, after its secretion, is conveyed from the liver through the biliary ducts, with or without the intervention of the gall-bladder, into the duodenum. Unfortunately, however, it is still a matter of dispute among anatomists and physiologists, whether these ducts and the gall-bladder be simply elastic, or whether they be endued with a muscular structure and irritable power. Assuming, as we are disposed to do, notwithstanding the opposite doctrine taught by some eminent physiologists and pathologists, that the biliary passages are susceptible of contraction from the application of a stimulus, we may consider the detention of bile in them as liable to depend either, 1st, on a want of the stimulus necessary to call the gall-ducts into action; or, 2d, on a paralytic condition of their

muscular coats; or, 3d, on a spasm occurring in some particular portion of their track.

52. From the flow of the bile into the duodenum not being constant, but occurring only when certain foreign matters are present in the duodenum, it is conceived by those who believe in the irritability of the biliary ducts, that the simple presence of that fluid in the ducts is not sufficient to call into operation the power by which its propulsion is effected; and that for this, there is farther required a stimulus acting at the intestinal extremity of the choledoch duct. When, from any cause, the ordinary stimulus does not operate, at that point, an accumulation of bile will take place in the biliary passages, *provided the secretion continues*. Accordingly, Mr. Ferral, in relating a case of stricture of the pylorus without cancer, particularly calls attention to the fact that the gall-bladder was found greatly enlarged and distended with bile. "This," he remarks, "appears to be connected with absence of chyme in the duodenum, and the want of the accustomed stimulus to the biliary ducts;" and he refers to Morgagni as relating an experiment performed by Valsalva on a dog which he starved to death, and in which, likewise, the gall-bladder was found unusually large and distended with bile. (Lond. Med. Gaz. 5th June, 1840.)

53. A *paralytic* condition of the gall-ducts or gall-bladder might be supposed to be occasioned by their over-distention, arising either from excessive secretion, or from temporary obstruction at a particular part of the biliary passages.

54. Independently of anatomical or physiological considerations, the pathological facts which seem to give countenance to the belief, that obstruction to the flow of bile through the ducts depends occasionally on *spasm*, are, that such obstruction is frequently of a temporary nature, suddenly commencing and suddenly ceasing, and that these phenomena occur, as is alleged, in persons of a nervous or hysterical habit of body. By some pathologists, however, as by M. Andral (Clin. Med. iv. 494), the admission of a state of spasmodic contraction of the gall-ducts is regarded as a pure supposition; and some imagine that when retention of bile depends upon spasm, it is the duodenum, and not the gall-ducts, that is the seat of the spasm.

55. By others, again, it has been supposed, that the cause of the bile's retention, when there exists no structural impediment to its flow, is to be sought for in its preternatural viscosity; but it seems as probable, or more probable, that preternatural viscosity of this fluid should be the consequence, as that it should be the cause, of its detention in the biliary passages.

56. Whatever may be the immediate cause of the detention of the bile in the gall-bladder, ducts, and *tubuli*, — and particularly whether this be dynamical or structural, — a very common consequence of such detention is the re-absorption of this fluid into the system, producing a yellow discolouration of the serum of the

blood, and a corresponding tinge in most of the fluid secretions, and of the solid tissues, — the state, in short, recognised under the name of jaundice. But cases are alleged to have occurred in which a great accumulation of bile has occurred in the gall-bladder, proving its regular secretion, while the evacuations have been destitute of colour, and yet no jaundice has manifested itself, that is to say, neither excretion nor re-absorption have occurred. By some it has been imagined, that the non-absorption of the bile, in such a case, must depend on its spissitude. Dr. Powell, again, alleges, that accumulation of bile, combined with non-absorption, occurs “in that disease of the gall-bladder in which its powers of contraction are wholly lost, and which may be considered as a paralysis of it, such as sometimes happens to the urinary bladder, between which and the gall-bladder,” he observes, “there are many strong analogies. The accumulation, in these instances,” he adds, “has not unfrequently arisen to such an extent as to form a tumour externally, with an evident fluctuation, which has induced the surgeon to puncture it under an idea that the collection was matter.”

57. In connection with morbid derangements of the biliary excretion, it may be remarked, that, after this fluid has been discharged by the choledoch duct into the duodenum, it may, in consequence of an inverted action of that portion of the intestinal canal, be thrown, in greater or less quantity, into the stomach.

SECTION II.

DERANGEMENTS IN THE CIRCULATION THROUGH THE BILIARY ORGANS.

58. In the liver, as in other textures and organs of the body, there occasionally occurs a preternatural accumulation of blood, confined to one or other portion, or extending to the whole, of the circulating system that is distributed through its substance ; an accumulation not accompanied with any of the other conditions of inflammatory action. This constitutes, of course, the state of vascular turgescence generally designated by pathologists under the name of Congestion.

59. Hepatic congestion seems, in a considerable proportion of the cases in which it occurs, to depend upon mechanical obstruction to the passage of the blood, through one or through both of the venous systems, the hepatic and the portal, with which that organ is provided, into the right side of the heart ; whether the obstruction be situated at the extremities of the portal ramifications, or in the trunks of the hepatic veins themselves ; in the vena cava ascend-

ens; in the heart, as when there exists disease of its valves, dilatation of its cavities, &c.; or even when it is seated primarily in the lungs, — as in asphyxia of the child taking place during birth, — and acts back from the lungs through the heart, &c., upon the hepatic circulation. As the effect of obstruction of the portal circulation must extend to all those organs which discharge their blood into the vena portarum, viz., the stomach intestines, pancreas, &c., so these organs are frequently found to participate with the liver in the congestive state.

60. But, besides *Mechanical* congestion of the liver, this state seems to occur when no organic impediment to the flow of the blood can be detected; sometimes being accompanied with increased force of action in the vascular system, constituting what is usually called *Active* congestion, or determination of blood, — a state the relation of which to simple inflammation it is not easy to determine, but which seems readily to pass into it. Sometimes the congestion is unaccompanied with any increase, or is even attended with a diminution of vascular action, as in scurvy, constituting the state denominated *Passive* congestion.

61. Of which ever of these three kinds, congestion of the liver may be, its physical effect upon that organ must be identical, viz., to distend its parenchymatous structure and enlarge its bulk, particularly causing it to extend downwards beyond the cartilaginous border of the ribs, or to project upwards towards the right cavity of the chest. There must, in all of these three forms of congestion, also, be a general correspondence in the appearances which the liver exhibits on post-mortem examination, the blood flowing freely from the divided surface when an incision is made into it.

62. It has been remarked that, in some cases of congestion, the whole substance of the liver is uniformly red; but that, in other instances, it is mottled red and yellow, or white, and that the relative position of the portions exhibiting the two colours is not uniform. Those who, with Ferrein, entertain the belief that the liver consists of two distinct substances, attribute the appearance of mottling, in congestion, to one of these substances undergoing this change, whilst the other remains free. But Mr. Kiernan, and those who, with him, regard the liver as uniform in its structure, and not as composed of two distinct substances, explain the appearance in question by supposing that the hepatic, or the portal venous system, may each respectively be in a state of congestion, and that, according as it is seated in the one or in the other, will be the relative position of the two colours.

63. The state of congestion of the liver seems sometimes to appear and to disappear very rapidly, particularly, according to M. Andral, in those cases in which it accompanies diseases of the heart, subsiding to a considerable degree, during their temporary alleviations from the detraction of blood. In which ever of its three forms hepatic congestion occurs, it may undergo resolution spontaneously, or under medical treatment; but it may also lay

the foundation of distinct inflammatory attacks, and probably, also, of various forms of non-inflammatory alterations of structure.

64. One of the effects which is liable to result from hepatic congestion occurring in a considerable degree, is an extravasation of blood. It would appear that the blood, in some cases, passes through the secreting vessels of the liver into the *tubuli biliferi*, replacing or mingling with the bile, and is discharged by the larger gall-ducts into the alimentary canal. "The liver," says Dr. Saunders, "is subject to hemorrhagy, rendering the bile of a very black colour, and producing dark coagula. On adding water to such bile, the black powder of red globules falls down to the bottom." "This does not indicate any abrasion or rupture of vessels: the organ may be, as yet, sound and entire. It is rather a defect in the action of the secretory organ, and may arise from pressure, infarction, or effusion. It is a state of congestion, not of inflammation."

65. In other instances, the extravasation takes place into one or more portions of the parenchymatous substance of the liver, producing what pathologists, in imitation of Laennec, are pleased to denominate hepatic apoplexy; but what may, with more propriety, be designated parenchymatous hemorrhage of the liver. In some cases, the extravasation occurs immediately beneath the peritoneal coat of the liver; and in other cases, the blood escapes by the rupture of the substance and coat of the liver, or even, it has been supposed, by mere transudation, into the cavity of the peritoneum. These different forms or degrees of hepatic hemorrhage may also occur independently of previous congestion, from the rupture or ulceration of the coats of some of the larger vessels of the liver.

66. There is a peculiar morbid appearance of the liver that has been met with occasionally in cases of the pernicious intermittent fevers of India and Italy, as well as of some other diseases, which seems to be more nearly allied with congestion, than with any other form of morbid alteration to which it can be referred. The appearance referred to, consists in the liver seeming as if it were composed of black blood slightly coagulated, and of cellular filaments which alone offer any resistance to the finger. When this slight resistance is overcome, the liver has merely the consistence of jelly beginning to melt; for the blood appears effused into its texture, which, indeed, no longer exists as texture, but simply as pulp. An analogous morbid appearance is of much more common occurrence in the spleen.

67. In cases in which there exists a general deficiency of blood in the vascular system, the pale colour of the liver betokens its participation in the anemic state. Does hepatic anemia ever occur as a local remedy? And if so, with what conditions of the circulation is it attended, and what influence has it upon the biliary secretion?

SECTION III.

STRUCTURAL ALTERATIONS OF THE BILIARY ORGANS,
INCLUDING INFLAMMATION.

HEPATITIS.

68. The parenchymatous substance of the liver and its serous covering are both susceptible of the state of inflammation. This affection may, in its commencement, be limited to the one or to the other of these structures; but even when it has so commenced, both of them usually become involved, in the progress of the disease. At least, where the serous membrane is first affected, the parenchyma, to a greater or less depth, can scarcely escape participating; and when the parenchyma suffers first, the inflammation must, in a large proportion of cases, by gradual diffusion, reach the serous surface.

69. It has been imagined that hepatitis assumes an acute character (meaning by this term that its symptoms are well marked, and its progress rapid), when the inflammation is seated in the serous covering; and a chronic character when the inflammation is seated in the parenchymatous substance. As regards temperate climates, this seems to be actually the case in a large proportion of instances; but in tropical climates this rule does not hold good, for, in them, acute inflammation of the parenchymatous substance of the liver is by no means uncommon.

PERITONEAL HEPATITIS.

70. The most important structural effect of inflammation of the serous covering of the liver, is the effusion of coagulable lymph upon its outer surface, whereby more or less of it is invested with a coating of greater or less thickness and density. We have seen a coating of this kind, of very considerable thickness, or what used to be considered as great thickening of the serous membrane, in a case in which, in consequence of tight lacing, the ribs had produced indentations of some depth on the surface of the liver. In consequence of adhesive inflammation of the hepatic peritoneum, adhesions are sometimes produced, more or less intimate, between the liver and the various organs and parts in its vicinity. We shall afterwards see how important a part these adhesions frequently perform in preventing the effusion, into the cavity of the abdomen, of various preternatural collections of fluids which occasionally form in the liver, and which tend, by progressive absorption, to reach its surface.

71. It happens, not unfrequently, that abscesses form between

the surface of the liver and some neighbouring organ or texture, with which it has contracted adhesions, as the stomach, the intestinal canal, the diaphragm, or the abdominal parietes. The first structural effect of this, as regards the liver, is the thickening of its membranous investments at the seat of the abscess, in consequence of the deposition of coagulable lymph. In a case of this kind which fell under our observation, and in which the abscess made its way through the diaphragm into the cavity of the thorax, a cup-like depression on the convex surface of the liver was bounded by a dense hard substance from the third to the half of an inch in thickness. But if ulcerative absorption should ensue, the hepatic base of the abscess may be destroyed, and more or less of the substance of the liver itself be removed, in which case it may be difficult, in post-mortem examinations, to distinguish between such an abscess and one which had originally formed in the substance of the liver.

PARENCHYMATOUS HEPATITIS.

72. When inflammation of the parenchymatous substance of the liver occurs, uncomplicated with any other disease, it seldom proves fatal until it has existed for a considerable length of time, and has passed through several of what are usually called the terminations of that state. It is only, therefore, in cases in which hepatitis supervenes on fever or dysentery during their advanced stages, and in which either the severity of the primary disease, or the additional shock of the new malady, causes a fatal termination, that pathologists have an opportunity of witnessing the effects which inflammation produces on the liver, in their incipient stage. In such cases, the usual appearances indicating inflammatory action may be observed, either over the whole of the surface, or throughout the whole internal structure, of the liver, or confined to a single lobe, or portion of a lobe. "The surface of the organ," as Mr. Annesley has observed (i. 433), "in the inflamed part, is generally more vascular than usual, of a bright red or reddish-brown colour. Sometimes it is covered with a gelatinous coating of lymph; at other times, by one much more consistent, which glues the inflamed surface to the contiguous parts. When this coating is removed, the surface of the organ underneath is of a deeper colour, more vascular than natural, and a little thickened. The substance of the liver immediately subjacent is also more vascular, and gives out more blood, when cut into, than in the healthy state. The internal structure of the organ, during the early stages of its inflammatory state, is always more vascular, of a reddish or brownish-red colour, and considerably more friable and softer than usual. Occasionally, however, it is firmer and denser; but this is chiefly observed in the more chronic cases of disease. In some instances, the surface of the inflamed organ is variously shaded: sometimes it is marked with red, brown, brick-coloured, greenish-brown, and

even with almost black spots and streaks, while the internal structure is inflamed, congested with blood, much tumefied, and softer than natural. Upon making a section of the viscus with a very sharp scalpel, and wiping with a sponge the cut surfaces, these present a lighter coloured reticulum, or mesh, studded with red or brick-red granulæ, and the divided ends of bloodvessels and biliary ducts. Upon being torn asunder, which is generally done with more facility in the acutely inflamed state, although sometimes with more difficulty in the chronic conditions of disease, the torn surfaces exude a greater quantity of fluid blood, but still retain their minutely granulated structure, and present both a brighter and a deeper colour than in their healthy state."

73. When inflammation of the substance of the liver does not undergo resolution in its incipient stage, there may ensue effusion, into its parenchymatous structure, of one or other of the secretory products of inflammation, viz., serum, coagulable lymph, or pus.

74. The effusion of serum singly into the substance of the liver, and the consequent production of a state of that organ properly designated *œdema*, has been observed in many cases, on post-mortem examination, but not in combination with marks of an active degree of inflammatory action. So long as inflammatory effusion is confined to serum, there are strong chances in favour of the inflammation undergoing resolution, and the patient recovering; and, in that case, the serous effusion will be absorbed, and no trace be left of its having ever existed. It is, consequently, more frequently in connection with the other forms of inflammatory effusion, that the pathological anatomist has occasion to see inflammatory *œdema* of the liver.

75. The effusion of *coagulable lymph* into the substance of the liver, with more or less serous, but without the accompaniment of purulent effusion, seems to occur not unfrequently, in cases of slight, but long continued inflammatory action; or in cases originally of a severe character, but which have been partially subdued by active treatment. This effusion is, of course, attended with a greater or less degree of induration and of enlargement of the whole organ, or of a portion of it, and particularly of the right lobe. (Annesley, i. 474 and 517.)

HEPATIC ABSCESS.

76. The effusion of *pus* into the substance of the liver, and the consequent formation of one or of several abscesses in that organ, is the most serious, and, unfortunately, by no means an uncommon result of inflammatory action, whether of an acute or of a chronic character. From observations that have been made in cases in which death has occurred at an early period of hepatitis, in consequence of its complicating, or being complicated, with

fever or dysentery, or of some other cause, such as wounds and accidents, there seems reason to believe that in many cases at least, suppuration of the liver commences with a softening of one or more small portions of its substance, and an infiltration at those parts of sero-purulent fluid into its parenchymatous structure. In the texture surrounding these softened portions, to a greater or less depth, there are found evident marks of increased vascularity. By the gradual absorption, probably, of the softened portions of the liver, and increasing purulent secretion, the extent of the abscess is gradually enlarged.

77. The inner surface of hepatic abscesses may be lined with an adventitious (pyogenic) membrane, of greater or less thickness, or may be destitute of this, in whole or in part. Their contents may present all the varieties of appearances met with in abscesses situated in other parts of the body.

78. The number of separate abscesses which form in the liver in particular cases, and the size which they individually attain, are subject to great variety. Sometimes there are numerous small abscesses, as of the size of a filbert, dispersed through its substance. Sometimes there is a single abscess nearly of as large dimensions as the liver itself, yielding as much as ten or eleven pounds of pus and upwards. From some trials made in Ceylon by Mr. Marshall, it appears probable that, during the formation of pus, the liver is increased in amount of substance, exclusively of the purulent matter secreted in the organ, and, no doubt, in consequence of the simultaneous deposition of coagulable lymph.

79. The rapidity with which suppuration takes place, and abscesses form and increase in the liver, seems to be subject to every possible variation. But, in particular instances, considerable difficulty arises in determining the duration of the period that elapses between the commencement of the inflammatory attack and the supervention of suppuration, in consequence of the obscurity of the attendant symptoms, — an obscurity not unfrequent even in cases in which there are the strongest grounds for believing that, as respects rapidity of progress at least, the disease is entitled to be regarded as acute.

80. Is suppuration, and the consequent formation of abscesses, more liable to occur in one portion of the liver than in another? It seems singular that M. Louis should have thought necessary farther investigation to determine whether abscesses ever really form in the parenchymatous structure of the liver, or whether the supposed abscesses of that organ have not their seat uniformly on its surface, between it and the membranes which cover it (*Rech. Anat. Patholog.* p. 351); for though, as we have seen (71), cases of the latter kind do occasionally occur, there seem no grounds for believing that, even in temperate climates, they are more frequent than abscesses of the parenchymatous substance of the liver. Of fourteen cases of suppuration of the

liver occurring in the 88th regiment, in Bombay, Sir James Macgrigor mentions, that in six it was seated in the right lobe ; in one, in the left ; in two, in the right lobe and lobulus Spigelii ; in two, in the right and left lobes ; and in three cases all the three lobes were in a state of suppuration. (Annals of Medicine, 1801, p. 363.) Of twenty-six cases of hepatic abscess in European subjects, observed by Mr. Geddes in the Madras Presidency, in fifteen the abscess occupied the upper part of the right lobe towards its posterior surface ; in three, the lower margin of the right lobe ; in two, the left lobe ; in one, there was one abscess in the centre of the right, and another in the left lobe ; and in five, there was a number of small abscesses disseminated through both lobes. (Trans. Med. and Phys. Soc. of Calcutta, vi.)

81. Does an abscess that has formed in the substance of the liver ever undergo resolution by the absorption of its contents ? And if so, what becomes of the purulent matter thus absorbed ? Does it remain in the circulating mass of fluid ; is it re-deposited in some different part of the body ; or is it thrown off from some emunctory, such as the mucons lining of the bronchi, or of the intestinal canal, or from the kidneys, &c. ? or, may it be disposed of in several, or in all these ways, in different cases, or in the same case ? These are questions to which each pathologist will be disposed to reply, according to the opinions he may entertain on the general doctrine of *purulent metastasis*.

82. Many cases unquestionably have been observed in which suspected abscess of the liver has disappeared ; and in some of these the bronchial, the alvine, or the urinary excretions have, singly or collectively, been found, simultaneously with the disappearance of the abscess, to contain a larger or smaller proportion of a purulent-like matter. Of late years, this subject has engaged a large share of attention on the part of several experienced practitioners in India, more especially of the late Dr. Conwell (Treatise on the Liver, 1835), and of Dr. Mouat of H. M. 13th Light Dragoons (Madras Quarterly Journ. No. v. p. 18), whose observations, if they are really to be explained on the principles they advocate, would show that, in hepatic abscess, purulent metastasis, particularly to the urinary organs, is of much more frequent occurrence than had previously been suspected.

83. Dr. Conwell seems to have thought that the disappearance of pus from hepatic abscesses, is not effected by a simple process of absorption ; but that the "vessels which traverse the area of an hepatic abscess become eroded, and that as the tumid state of that organ subsides, the hepatic veins, relieved from pressure, dilate their openings, leading from the surface of suppuration to the vena cava, and become pervious." (P. 489.) In some of his dissections, veins filled with pus were traced into the cysts of abscesses in the liver. Mr. Malcolmson, in reference to the possibility of the pus of a hepatic abscess passing into the venous trunks, and thus

being evacuated by the urine, makes the following observations: —“I have observed the large veins hanging loose into the cavity of abscesses, their coats unchanged, and their orifices only obstructed by soft and very slightly attached coagula of blood, which, in one instance, had given way, and hastened the death of the patient by hemorrhage into the abscess. But, although I have diligently looked for it, I have never discovered pus in the veins, and have found the puriform deposits in the urine, considered as pus derived from the liver abscess, present in cases where no abscess existed; and, in other instances, have ascertained the supposed pus to be secretions of a very different kind. Yet, making every allowance for the many sources of error to which the observations in question are subject, the inquiry is one deserving of the utmost attention; and if the present state of science admits of it, a great benefit would be conferred on practitioners in warm climates, by a clear statement, from competent authority, of the observations necessary to establish the fact, and the fallacies to which such observations are liable.” (Med. Chir. Trans. xxi. 105.)

84. In the progress of a hepatic abscess to the surface of the liver, adhesion sometimes takes place to the neighbouring organs or parts, and sometimes not. What the circumstances are which determine the formation or non-formation of such adhesions, that is, which determine the production of inflammation, and the effusion of coagulable lymph, on the peritoneal surfaces, it is not easy to determine. Dr. Daun, in some valuable observations appended to an “Abstract of cases of hepatitis occurring in the 89th regiment at Quilon,* during the months of September and October, 1819,” which we have had the advantage of perusing, represents it as a characteristic feature of the Quilon hepatitis, that the membranous surface of the liver is very seldom affected with inflammation, and that consequently adhesion of this surface to the neighbouring organs very seldom happens at that station. From an excellent report from the same station by the late Dr. Nicoll, then surgeon of the 80th regiment, it appears that that gentleman had been led to believe that simple acute hepatitis is much more frequently attended with adhesions of the liver to the diaphragm, than hepatitis complicated with intermittent or remittent fevers, or with dysentery or diarrhœa.

85. If a hepatic abscess reaches the surface of the liver without adhesions having formed between the prominent portion of its external surface and the adjacent organs or parts, the progressive ulceration, or the accidental rupture, of its parietes, must be followed by the discharge of its contents into the cavity of the abdomen. Such an occurrence will, of course, be speedily succeeded by peritoneal inflammation, under which the patient will rapidly sink. This termination of a hepatic abscess may, it is obvious,

* Quilon is situated in the Presidency of Madras, on the coast of Travancore, between Cape Comorin and Cochin, Lat. 8° 50' N; Long. 76° 40' E.

occur, in whatever part of the liver the abscess is situated. As to its frequency, it may be mentioned, that of Mr. Geddes's twenty-six cases of hepatic abscess, in one only had rupture occurred into the abdominal cavity, and that was one of the two in which the abscess was seated in the left lobe (80). Of sixteen cases of hepatitis, detailed in the report of Dr. Daun, already referred to, in two an abscess had burst into the cavity of the abdomen. "This," Dr. D. remarks, "is a rare occurrence, but it is one more likely to happen at Quilon than at most other stations."

86. In respect of cases in which, on inspection after death, an abscess of the liver is found to have burst into the cavity of the abdomen, but in which an opportunity has not existed of watching the symptoms during life, it is proper to keep in remembrance that rupture of a hepatic abscess may probably happen, in some instances, after death, from incautiously moving the body. Is it not probable that this had occurred in a case related by Vogel (Loder's *Jour. f. d. Chirurgie*, ii. 264), in which no sudden aggravation of symptoms had occurred previously to the patient's death?

87. It may be remarked, both in respect of abscesses originating in the substance of the liver, and of those to which we have already referred (71), as liable to form upon its surface, that any adhesions to neighbouring organs by which they may be bounded, may experience ulceration or rupture; and in this way their contents may be discharged into the cavity of the abdomen, just as if no adhesions had ever existed.

88. If an abscess, forming in the substance or on the surface of the liver, shall take the direction of the abdominal parietes, and effect adhesion with them, then it will point, and, unless opened artificially, may finally burst and discharge its contents, externally. The situation on the surface of the body at which a hepatic abscess may point, is liable to considerable diversity; indeed, this may happen at any part with which the liver is naturally in contact, or with which its enlargement may bring it into contact. A considerable number of cases have been recorded in which hepatic abscesses discharged externally, either by spontaneous or by artificial apertures, have undergone a cure. Many circumstances, however, may interfere to prevent this fortunate termination. One of these, to which attention has lately been particularly directed, is the occurrence of gangrenous ulceration of the parietes of the abdomen. In reference to an opinion expressed by Mr. Hawkins, that two cases in which this occurred in his practice, were not examples of abscess of the liver, but of encysted tumours of the peritoneal coat, Dr. Malcomson states his conviction, that the gangrenous ulceration depends on a cause quite unconnected with anything peculiar to the internal disease, and that it becomes a serious obstacle to the recovery of many patients in whom ordinary abscesses of the liver are opened. (*Edin. Med. Surg. Journ.* lii. 353, also 382.)

89. When an abscess occupies the upper or convex portion of the liver, so as to be seated near to the suspensory ligament, if adhesive inflammation occurs on its outer surface, the diaphragm will come to form a part of the sac of the abscess, and the substance of that muscular septum may be gradually removed by progressive absorption. In the mean time, the corresponding pleural surface of the diaphragm may either take on adhesive inflammation in its turn, and become attached to the lung, or it may remain free. In the latter case, when the whole thickness of the diaphragm is perforated,* the contents of the hepatic abscess will be discharged into the right cavity of the chest, producing all the effects of empyema, that is to say, compressing the lung, in a greater or less degree, according to its quantity, upwards and backwards, towards its bronchial attachments. As in empyema depending on inflammation of the pleura, so in the discharge of a hepatic abscess into the thorax, the purulent collection may point externally, and either undergo spontaneous rupture, or be opened artificially.

90. If, on the other hand, adhesion takes place between the diaphragmatic and the pulmonic pleura, the abscess will open into the parenchyma of the lungs, and be discharged, more or less completely, by expectoration. Of 64 cases of hepatitis which occurred in the 88th Regiment in Bombay, from June 1799 to June 1800, Sir J. McGrigor mentions that, in two of the fatal cases, the right lobes of the liver and lungs communicated (*Ann. of Medic.* 1801, p. 365). Of Mr. Geddes's 26 cases of hepatic abscess (80), in two, the abscess had traversed the diaphragm and lungs, and part of its contents had been brought up by expectoration. Both of these were cases in which the abscess was seated in the right lobe.

91. The size of the aperture in the diaphragm, by which a hepatic abscess is discharged into the cavity of the chest, or into the substance of the lungs, is very various, being sometimes as large as the cavity of the abscess, but sometimes very small. In a case mentioned by Curtis (p. 98), it was not larger than would allow a very small quill to pass. "The matter," says Dr. Pemberton, "either bursts suddenly into the lungs, by which the patient is instantly destroyed, or it filters through innumerable small orifices into the air-cells, and is spit up gradually for many weeks. This fortunate occurrence may still give the patient some small chance of recovery, but it more commonly happens that, after having been worn down by continual coughing and hectic fever, he at last sinks under the disease." Mr. Curtis conceives that there can be very few instances of suppuration of the liver healing up in this way. "We had," says he, "seven or eight of these cases at the hospital, but all of them proved fatal." And Mr. Marshall, in observing that "recoveries sometimes occur after the contents of an abscess of the liver have passed through the lungs," adds; "this fortunate

* Senac states (*Maladies du Cœur* ii. 307), that he has seen in some bodies the pus of hepatic abscesses glide beneath the pleura, without penetrating into the chest.

circumstance happens, I believe, but rarely, except in cases where the abscess is very small, and the consequent inflammation of the lungs not very extensive." (P. 149, 150).

92. A few instances have been observed in which an abscess of the liver has discharged itself into the cavity of the pericardium. A case of this kind, related by Dr. Smith, an American physician, is noticed by M. Andral in his work on Pathological Anatomy. A second case fell, as we are informed, under the observation of Mr. Knott, assistant-surgeon to the Enniskillen Dragoons, while serving in India. A third case, in which the same occurrence took place, under Dr. Graves' notice, will be alluded to presently.

93. It happens not unfrequently, in cases of hepatic abscess, that it forms adhesions with, and ultimately discharges its contents into, one or other portion of the alimentary canal. Sometimes it is with the stomach, sometimes with the duodenum, and sometimes with the transverse arch of the colon, that the communication is effected. From the anatomical relations of the parts, it is abscesses of the left lobe of the liver principally that open into the stomach. When a hepatic abscess communicates with the stomach, its contents may be evacuated partly by vomiting and partly by stool; when with the colon, entirely by stool. Of the 64 cases of hepatitis occurring in the 88th Regiment, under Sir J. McGrigor's observation (90), in three abscesses of the liver found their way into the intestines. When this mode of discharge takes place, the patient not unfrequently recovers.

94. It has been alleged that the contents of a hepatic abscess occasionally find their way into the intestinal canal, not by a *direct* preternatural communication, but through the intervention of the gall-ducts, into which they enter by a preternatural opening in their parietes. Few instances of this mode of discharge, however, seem to have been ascertained by actual dissection. In a case of hydatid abscess that occurred to Valsalva, the biliary duct communicated with the abscess by a large orifice, and was dilated throughout the whole of the rest of its extent; showing manifestly, as Morgagni remarks, "how it might have received vesicles from the abscess, and conveyed them into the duodenum."

95. Occasionally one and the same hepatic abscess opens by several apertures, either in the same or in different directions, and at various intervals of time. Thus in a case mentioned by Bajon, a hepatic abscess seemed to discharge itself first into the lungs, and afterwards into the intestinal canal; and Dr. Graves has recorded a case of hepatic abscess, which, besides opening into the stomach by three perforations, also opened into the sac of the pericardium. (Dubl. Med. Journ. No. xiv. 349.)

96. Sometimes two or more abscesses find their way to the surface of the liver. These may take the same general direction. Thus Asper relates a case in which two operations were performed for the evacuation of separate abscesses, and the patient recovered. In other instances the abscesses take different direc-

tions. Petit mentions a case, for example, in which a hepatic abscess was opened artificially, and, five months afterwards, when it was healed up, the patient had an attack of illness accompanied with purulent alvine evacuations, of which he died on the fifteenth day, when there was found an abscess of the concave part of the liver, opening into the colon. And in a case related by Drs. Graves and Stokes, the contents of an abscess in the right lobe of the liver escaped into the intestines; but, subsequently, an abscess in the left lobe burst into the sac of the peritoneum.

97. Besides being discharged into the cavities of the abdomen or thorax, or into the lungs or the several portions of the intestinal canal, hepatic abscesses have been found, in a smaller proportion of cases, to take other routes, and establish other communications, as, for instance, to open into the vena cava, or into the infundibulum or pelvis of the kidney.

CICATRICES IN THE LIVER.

98. When a hepatic abscess is discharged by nature or art, it frequently happens, particularly when the aperture is external, that the discharge gradually diminishes, and ultimately ceases; and, consequently, it may be inferred that the cavity is obliterated by cicatrization. Have any cases of this kind been recorded in which a post-mortem examination has been made; and, if so, what have been the appearances found?

99. In cases in which the contents of a hepatic abscess undergo reabsorption (76), is its cavity obliterated by cicatrization? Or can we believe, as Dr. Nicoll seems to have done, that the contents of very small hepatic abscesses may be discharged into the cavity of the abdomen, without giving rise to fatal consequences, and cicatrization subsequently ensue? Various cases have been recorded, and several have now been delineated, in which portions of fibrous or cartilaginous substance, on the surface or in the interior of the liver, each with radii stretching to a greater or less distance from a central part, have been met with in post-mortem examinations, and this sometimes in individuals who had been suspected, during life, to be affected with hepatic abscess. But to the recognition of these appearances as genuine cicatrices, it has been objected that they have never been met with in the successive stages which a cicatrizing abscess must pass through, previously to the completion of that process. (Louis *Rech. Anat. Pathol.* p. 408.)

ULCERATION OF THE LIVER.

100. Besides the process of progressive absorption which attends the enlargement of abscesses, and effects their approach to the surface, the liver has appeared to be in some cases the seat of ulcerative absorption or ulceration. This process may ac-

company or supervene on the progress of a hepatic abscess, as when it attacks the inner surface of an abscess that has discharged its contents into the lungs, or when it attacks the circumference of an abscess that has contracted adhesions with a neighbouring organ, in which last case the issue may be the same as if no adhesion had formed.

101. In other cases, ulceration of the substance of the liver seems to have succeeded to the establishment of adhesions between this and neighbouring organs, independently of the previous formation of abscess. Is the ulceration in this case propagated from the neighbouring organ, as the stomach, to the liver, or from the liver to the neighbouring organ? It seems probable that in cases of small simple ulcers forming in the stomach, and accompanied with adhesion to the liver, amongst other organs, ulceration of the liver may be only a secondary effect. Is not malignant ulceration of the stomach also liable to extend to the liver in cases of adhesion between these two organs?

GANGRENE OF THE LIVER.

102. Does the liver ever become the seat of gangrenous inflammation? It is highly probable that many of the cases which have been recorded as examples of this occurrence, were not actually such; but merely cases in which, from various causes, some operating during life, and others only after death, softening of a part or of the whole of the liver was accompanied with a greater or less degree of dark discoloration. But, in rejecting many, are we to reject all the cases of alleged gangrenous inflammation of the liver? Mr. Annesley states that he has never seen a true case of this affection. (i. 434.) Do the cases related, or referred to, by Dr. Chisholm (Edin. Med. Surg. Journ. vii. 257), establish the actual occurrence of gangrene as an occasional termination of inflammation of the liver? (1.) In one of these, it is mentioned, there arose from the body a most disagreeable smell; and, on opening the abdomen, the fœtor became so intolerable that it was difficult to support it during the examination of the liver. Three-fourths of this viscus were composed of three abscesses full of pus, and the remaining fourth was so far sphacelated that it resembled rotten wood, and crumbled, on handling it, in the manner in which such wood does. (2.) In another case, the symptoms of hepatitis were more violent, says Dr. C., than in any of the many thousands I have had occasion to treat, the patient dying on the evening of the fourth day. The concave surface of the liver was totally sphacelated, and on the convex was an abscess and adhesion. (3.) Mr. Marshall mentions (148) that, on inspecting the bodies of two men who died of dysentery in Kandy, abscesses were found in the livers, containing ill-conditioned offensive sanies. In both these cases, the walls of the abscess were in a state of gangrene.

At a little distance from the seat of the abscess, the substance of the liver showed no traces of disease. "Except these two cases," observes Mr. M., "I have not observed a tendency of the liver towards mortification." (4.) In a case of hepatitis terminating in sphacelus, related in the *Edin. Med. and Surg. Journ.* (viii. 56), by W. C., surgeon in the navy, it is stated that the liver was a mass of thick grumous pus, with sphacelated portions. (5.) The only instance in which gangrene of the liver has been seen by M. Andral, was in a case of abscess of that organ, with gangrene of the parenchyma surrounding it, which occurred in a man 60 years of age. (*Clin. Med.* iv. 420.) (6.) In a case in which a person attempted to kill himself, first by cutting his throat with a knife, and afterwards by discharging a pistol at his forehead, and in which the wound of the throat mortified, and exfoliation from the frontal bone occurred, there was found after death a large gangrenous abscess of the upper part of the right lobe of the liver. (Dr. Thomson's *Collection of Pathological Delineations*. See also Conwell, § 135.)

103. Dr. Stokes has been led, by the consideration of what he conceives to be an undoubted case of actual gangrene of the liver, to suspect that this never occurs, as the result of inflammation properly so called, but that it may be the result of hepatic apoplexy, or hepatic parenchymatous hemorrhage. (*Dubl. Med. Journ.* iii. 360.) Without offering any comments on this opinion, we shall simply suggest the question whether, as in the lungs, there occurs a state which is considered gangrenous, that does not seem to be a termination of pneumonia, so there is in the liver a gangrenous or gangrenoid affection which is not a consequence of hepatitis?

104. We have seen (75), that inflammation of the liver sometimes gives rise to an increase in its bulk, in consequence of its being accompanied with the effusion of coagulable lymph. But in cases of hepatitis which assume a very chronic character, it sometimes happens that the liver undergoes a diminution of its bulk. In some cases in which the liver has been found to be of unusually small dimensions, there has been the appearance of one or more cicatrices on its surface, leading some to suppose that the diminution of bulk had proceeded from the previous existence of abscess. But this, it is obvious, would, of itself, occasion only a partial deficiency, and not a general shrinking of the organ. In other instances of diminished bulk of the liver, no appearance of cicatrization has presented itself. From the observations of Dr. Saunders, it would appear, that though, in cases of this kind, there is an increased density and diminished porousness of the parenchymatous substance, and consequently an increased specific gravity, there is, on the whole, a diminution in the weight of the organ, leading to the inference that it has undergone, not a mere compression, but a removal of a portion of its substance (p. 280-1).

ADIPOSE DEGENERATION OF THE LIVER.

105. A very remarkable, but not very uncommon, structural alteration of the liver, consists in the deposition of fatty matter throughout its substance. The surface of a liver that has undergone fatty degeneration exhibits, as Dr. Addison remarks (Guy's Hosp. Rep. i. 476), a pretty uniform and highly characteristic appearance. It is of a cream or pale yellow colour, figured irregularly with brownish or deep orange spots. It is usually, though not always, more or less enlarged, and sometimes very considerably so. When cut into, its interior is found to present an appearance somewhat corresponding to that of the exterior, excepting that the brown and pale yellow tissues are much more uniformly distributed throughout the entire substance of the organ than they are upon its surface. It is sometimes softer, and more readily crushed between the fingers, than is the healthy liver. Sometimes, however, it is firmer than natural, and occasionally even of a scirrhus or almost horny hardness.

106. The presence of fatty matter in the liver is manifested by the unctuous feel it communicates to the fingers; by the greasing of the knife with which it is divided; by the stain it imparts to bibulous paper on which it is pressed, and the manner in which such paper burns; as well as by the exudation of oil, when a portion of its substance is exposed to dry heat, as in the flame of a candle, or is immersed, in thin slices, in boiling water. Whether the oily or fatty matter deposited in the substance of the liver, be, in all cases, of the same nature, we do not possess the means of determining. In a case in which it amounted to somewhat less than a twentieth part of the substance of the organ, Mr. Bird found it (*ut supra*, p. 478) to consist of a soft brownish fat, very fusible, and possessing a peculiar and unpleasant odour; and in another case, in which it constituted the greater part of the substance of the organ, Dr. Bostock found it to be generally similar to tallow in its chemical properties. (Dr. Bright's Reports, i. 114.) In this structural alteration, is the fatty matter superadded to the natural structure of the liver? or, does it replace a greater or less amount of that substance which has been removed by interstitial absorption? There seems reason to believe that, in proportion as fatty matter is deposited, the proper substance of the liver is removed. We do not know to what extent this substitution may go on in extreme cases; but, from the analysis by Dr. Bostock just referred to, it would appear that the greatest part of the organ, at least, may come to be composed of fatty matter.

GRANULAR DEGENERATION OF THE LIVER, OR CIRRHOSIS.

107. One of the structural alterations most commonly met with in the liver, in temperate climates, is that which was described by Dr. Baillie under the name of the Common Tubercle of the liver, and

which is, at present, generally recognised under the designation of the granular state of that organ. "The tubercles which are formed in this disease," says Dr. Baillie, "occupy generally the whole mass of the liver, are placed very near each other, and are of a rounded shape. They give an appearance, everywhere, of irregularity to its surface. When cut into, they are found to consist of a brownish or yellowish-white solid matter. They are sometimes of a very small size, not larger than the heads of large pins; but, most frequently, they are as large as small hazle-nuts, and many of them are sometimes larger. When the liver is thus tuberculated, it feels much harder to the touch than natural, and not uncommonly its lower edge is bent a little forward. Its size, however, is generally not larger than in the healthy state, and I think it is often smaller. If a section of the liver be made in this state, its vessels seem to have a smaller diameter than naturally. It very frequently happens that, in this state, the liver is of a yellow colour, arising from the bile accumulated in its substance." "This," Dr. Baillie adds, "is the common appearance of what is generally called a *scirrhus* liver; but it bears only a remote resemblance to scirrhus in other parts of the body. I should, therefore, be disposed to consider it as a peculiar disease affecting this viscus."

108. Very various opinions have been entertained by pathologists since the publication of Dr. Baillie's work on Morbid Anatomy, as to the nature of the tubercles, granules, or nodules which form the characteristic feature of this structural alteration. By some, they have been regarded as consisting of an entirely morbid formation, whilst, by others, they have been supposed to be produced by an irregular development of the natural substance of the liver, or of a particular portion of it. If the former of these opinions were correct, it might be expected that the same kind of morbid formation would occur in other organs besides the liver; while, if the production of the granules or nodules depends on an irregular development of the natural structure of the liver, it follows that they can be expected to present themselves only in this organ, or in such others as possess an analogous glandular structure.

109. We have seen that Dr. Baillie was disposed to regard these nodules as a peculiar disease affecting the liver. M. Laennec also conceived them to be a morbid production, but one differing from any which had previously received a name; and, in reference to the yellow colour which the nodules frequently exhibit, he proposed to apply to this *accidental texture*, the name of Cirrhosis. "In proportion," says he, "as the cirrhoses develop themselves, the texture of the liver is absorbed, and often, at length, disappears entirely; and, in all cases, a liver which contains cirrhoses, loses in size in place of increasing proportionally. This species of production," he farther alleges, "developes itself also in other organs, and at length softens like all morbid productions."

110. Those pathologists who have coincided in regarding cirrhosis of the liver as the consequence of an irregular development of the

natural anatomical elements of that organ, have differed in their more particular views of its nature, according as they have conceived with Ferrein, that the liver consists of two distinct substances, or with Kiernan, that it is composed of one substance only, "the structure of all the lobules being similar, and each lobule being of the same structure throughout."

111. M. Boulland seems to have been the first writer who maintained that the round bodies which characterise granular liver are not referrible to a texture of new formation, but depend on a dissociation or disgregation, according to his own phrases, of the two natural elements of that organ, viz., the glandular grains, acini or yellow element, and the vascular network, or brown-element. Its first stage he conceived to consist in an increase of the extent of the vascular network, caused by habitual sanguineous congestion; and its most advanced degree, to consist in the obliteration of this network. "The tawny yellow masses constituting cirrhosis," says he, "are, in our opinion, nothing else than the secretory granules undergoing gradual disorganization, in consequence of the obliteration of the vascular network, and of the obstacle to the hepatic circulation thence arising." (*Mem. de la Soc. Med. d'Emul.* ix. 170.)

112. M. Andral adopted the same general view with Boulland as to the nature of this structural alteration, stating that, in dissecting with care, livers in which granulations existed, it appeared to him evident that these granulations were merely a result of hypertrophy of the white substance of the liver; and that to account for their development, there is no need of admitting the production of any new texture. While the white substance of the liver undergoes hypertrophy, the red substance may remain of its natural amount, or may increase or diminish in amount; and on this circumstance depend the variations in respect of its bulk and other physical qualities, which the liver, in the state of granulation, is liable to exhibit.

113. The only explanations of the production of the granular state of the liver, founded on a belief of that organ consisting of one substance only, with which we are acquainted, are, 1st, that proposed by Cruveilhier, who attributes cirrhosis to atrophy, or complete disappearance, of the greatest number of the hepatic granules, with a considerable development of those which remain, but without any process that can be regarded as disorganizing, such as Boulland had assumed to exist; and 2d, that of Dr. Carswell, according to whom the morbid condition of the liver, denominated cirrhosis, consists in atrophy of the lobular structure of the organ, produced by the presence of a contractile fibrous tissue, originating in inflammation, and formed in the capsule of Glisson; and is not, as Laennec supposed, a disease depending on the formation of a new tissue. (*Illustrations, &c. Art. Atrophy.*)

114. If to these various explanations, we add that of Dr. Hope, to whose elaborate descriptions and delineations of the varieties

which granular liver is liable to exhibit, we have much pleasure in referring, (Principles and Illustrations of Morbid Anatomy, p. 104, and figs. 75 to 84,) we shall, we believe, have presented to our readers a summary of nearly all that has been suggested, as to the mode in which granular degeneration of the liver is produced, the speculations on which subject we consider as of the more importance, that they seem calculated to throw considerable light on several obscure points both in healthy and in morbid anatomy. Dr. Hope, then, concludes from his examinations, that granulations consist not in mere hypertrophy of the white (or yellow) substance, but in an interstitial deposition in that substance, connected with a lesion of secretion. "Whether," says he, "this deposition is an accidental tissue or not, I leave others to decide; but to me it appears to result from an alteration in the form, rather than in the nature of the secretion; since the granulations present a texture and discharge a function analogous to those of the natural white substance, a greater degree of density constituting the only very appreciable difference."

115. Are the morbid appearances, of the mode of production of which such various explanations have been given, actually dependent on a single and identical structural alteration? This is a question which, notwithstanding the many examples of granular hepatic disease that have fallen under our observation, we must confess ourselves incompetent to resolve. Its determination appears to require a more minute species of investigation, by injection, dissection, and microscopic examination, in the successive stages and different aspects of granular degeneration, than, with all the labour bestowed on the subject, it seems yet to have received.

TUBERCLES OF THE LIVER.

116. The peculiar morbid deposit to which the name of *tubercle* is at the present day exclusively appropriated by pathological anatomists, and which is familiarly known to them as occurring in the lungs, and there giving rise to genuine pulmonary consumption, is rarely met with in the liver of the human adult. M. Cruveilhier states, that, among the numerous cases of pulmonary and abdominal phthisis which he has had occasion to examine, he has never met with turbercles of the liver; and M. Louis, in his work on phthisis, mentions, p. 118-119, that in two cases only had he observed a greater or smaller quantity of tuberculous matter in the liver. It is stated by M. Cruveilhier, however, that in the livers of tuberculous children, it is not uncommon to find thousands of small granulations of the size of millet seeds, hard and semi-transparent, which can be felt, as well as seen, in consequence of their density, but which usually escape inattentive examination; and in the liver of the lower animals, as the rabbit, the sheep, the monkey, &c., this species of morbid deposit is not uncommon.

CYSTIC DEGENERATION OF THE LIVER.

117. Under the term Hydatid, or some corresponding term, pathological anatomists have very frequently included two morbid changes of structure, which are, in reality, very distinct from one another; *first*, a collection of watery fluid, contained in a cyst, the inner surface of which exhibits the general characters of serous membrane, whilst its outer surface is either adherent to the substance of an organ in which it is more or less imbedded, or, if not so imbedded, is covered with a layer of condensed cellular substance, of greater or less thickness. The *second* morbid alteration which has been included under the name of hydatid, is a cyst of the same general characters as the preceding, but containing within itself one or more detached cysts, which various circumstances prove to be distinct animals, or what are now generally designated *entozoa*. As it is desirable carefully to discriminate between these two kinds of morbid alterations, the former may be denominated Simple serous or watery Cysts, and the latter Hydatid Cysts; or from the genus of hydatid entozoa, which cysts of the latter description are found to contain, they may be called Acephalocyst cysts. Each of these two forms of cysts is occasionally met with in the liver.

118. Simple watery or serous cysts may be found on the edge or surface of this organ, or more or less completely imbedded in its substance. How they take their origin, whether by the expansion of a cell naturally existing, or by the production of a cell entirely new, is not understood. But having once commenced, they may attain very considerable dimensions. In respect of number, they are sometimes single, and sometimes several coexist. When a cyst of this kind is not wholly imbedded in the parenchyma of the liver, the distension of its parietes may, in the progress of its development, become such as to occasion its rupture, and the consequent discharge of its contents into the cavity of the abdomen. There seems reason to believe, that, in particular circumstances, serous cysts connected with the liver take on inflammation of their inner surface, which may terminate in suppuration, so as to convert their cavity into an abscess.

119. There seems to be no organ of the body which is so subject as the liver to the development in its substance of hydatid or acephalocyst cysts. The number of such cysts that form in this organ seems to range from one to four, the latter being the greatest number which Cruveilhier, who has paid much attention to this morbid alteration of the liver, has on any occasion met with. The number of hydatids contained within each such cyst, is very various. Cruveilhier states, that the multiple or fruitful acephalocyst occurs much more frequently than the solitary or barren one.

120. It sometimes happens that the inner surface of an hydatid cyst takes on suppurative inflammation, and, in this way, instead of containing simply hydatids with more or less of serous fluid, the cyst comes to be filled with a mixture of pus and dead hydatids.

121. In the gradual enlargement of an hydatid cyst of the liver, suppurated or not suppurated, its contents are liable to all the same contingencies as those of an abscess of that organ. From external violence, or its spontaneous development, the cyst may be ruptured, and its contents discharged into the cavity of the peritoneum; or the cyst having, by the occurrence of adhesive inflammation, become united to the parietes of the abdomen, its contents may be discharged externally; or, in the event of the cyst adhering to the diaphragm, they may enter into the cavity of the chest or into the lungs, or into both; or, if the adhesion shall be to some portion of the alimentary canal, the contents may be vomited or voided by stool.

122. Without entering on the merits of the doctrine so elaborately enforced by Dr. Baron, in his *Inquiry* illustrating the nature of Tuberculated Accretions, &c., and subsequent publications, viz., that the different forms of morbid growths to which animal structures are liable, comprehending all the various modifications of tubercles and tumours, are, in fact, degenerated or transformed hydatids, we may admit that hydatid cysts and their contents, as they occur in the liver, are liable to undergo various kinds of degeneration or transformation; so that, from this common source, there may result a considerable diversity of morbid appearances, in different livers, or even in different portions of the same liver. It is not unusual to meet with such conversions of hydatid cysts and their contents in the livers of the lower animals; and in that of the human subject, also, similar conversions have occasionally been met with. In the cases referred to, the nature of the primary affection in which the various forms of morbid growth under observation had originated, has been sufficiently established by the circumstances that, in some parts of the organ, hydatid cysts, retaining their original characters, have existed; and that, within some of those cysts which had undergone partial conversions, coats of hydatids, little if at all altered, have been found. The changes which occur in the cysts themselves, seem to be, chiefly, the deposition of more or less of cartilaginous, and subsequently, probably, of bony matter in their coats. The changes in their contents are probably more varied; the matter into which they are changed resembling sometimes suet, and sometimes tubercular matter, and, in some cases, assuming a cretaceous character.

MALIGNANT DEGENERATIONS OF THE LIVER.

123. In a large proportion of the cases in which morbid growths referrible to any of those forms of new structures or accidental textures to which pathologists apply the term malignant (comprehending the various modifications of scirrhus, cancerous, encephaloid, hæmatoid, and melanose tumours), are met with in the liver, post-mortem examination shows that similar growths exist likewise in other organs or textures of the body; and there seem good grounds for believing that, in a considerable number of such cases, the development of these growths in the liver is posterior to their appearance in one or in several of the other parts. "Of all organs," says Dr. Hodgkin, "the liver is perhaps the most liable to become the seat of secondary depositions of malignant tumours or tubercles. We find them in this situation when the primary formation has taken place in the eye, the breast, the stomach, the rectum, the mesentery, the kidney, the testicle, or, perhaps, in many other situations."

124. Of very many cases of malignant degeneration of the liver, which have fallen under our own observation, a considerable number has occurred in females, who had undergone at different periods before death, amputation of the mamma; a considerable number has been in individuals who laboured under malignant affection of the stomach; several in persons whose death was primarily attributable to cancerous obstruction of the intestinal canal; and several, also, in persons in whom extirpation of the eyeball had been practised, on account of malignant disease of that organ.

125. But whilst the development of malignant growths in the liver seems frequently to be *consecutive* to their development in other parts of the body, it is not invariably so, for it occasionally happens that the liver is the first and the only organ in which they occur. Thus, several cases of *fungus hæmatodes* have been related by Mr. Langstaff (Med. Chir. Trans. viii. 288, 291; ix. 302), in which this affection occurred in the liver exclusively, showing, as he observes, that "this disease may attack an important organ, and produce death, without the specific disease diffusing itself to any other viscus."

126. Whether cancer of the liver occurs as a primary, or as a secondary or consecutive affection, it may be limited to only a single point, and, spreading from this, attack the contiguous parts in succession; or it may be developed in a number of different points of the organ at the same time. Consecutive cancer, limited to a single point, may arise from contiguity of texture. Thus, as Cruveilhier remarks, it is not uncommon for cancer of the small curvature of the stomach to attack the lower surface of the liver (which, having become intimately united to that curvature, replaces the parts of the stomach that have been destroyed), in such

a way that the liver may be removed, by successive layers, from its concave to its convex surface. But, most commonly, cancer of the liver, whether primary or consecutive, develops itself in a great number of points, leaving the intermediate parts untouched. This constitutes what has been called by Cruveilhier, "cancer of the liver in disseminated masses; and it is to this form of cancerous disease, that the remarks we have now to offer, principally apply.

127. When cancer of the liver occurs in disseminated masses, a large proportion of these masses (Cruveilhier says, sixteen out of twenty), are observable upon the surface of the organ, from which they project in a greater or less degree, so as to produce a corresponding number of prominences, of different sizes, that represent portions of a spheroid. As each of these tumours enlarges, its spheroidal prominence becomes hollowed out, towards the middle, by a cup-formed depression. These physical characters of cancerous tumours in the liver, are of practical importance, because they can frequently be recognised through the parietes of the abdomen, so as to lead to a knowledge of the nature of the disease. The *cupping* in the centre which they undergo, has been attributed to an increase in the density of the sub-peritoneal cellular tissue at the corresponding point. Dr. Farre, in speaking of the class of cancerous tumours which he designates *tubera circumscripta*, has very correctly stated that "they commonly remain distinct at the surface of the liver, but, internally, they ultimately coalesce, and form immense morbid masses which pervade its substance." We have sometimes noticed, in dividing a liver affected with this structural alteration, that a section in one direction exhibited the appearance of a number of distinct tumours; whilst a section made in a different direction, presented the appearance of the whole organ having been converted into the morbid growth in a uniform and continuous manner.

128. The number of points in which cancerous matter is deposited, and, consequently, in which cancerous masses form, is very different in different cases. It may vary from one or two to several thousands. The size to which they attain, likewise, is subject to great variety; but, in general, it may be said that their size is in the inverse proportion of their number. From the size of a millet-seed to that of the head of a child at birth, they may be found in every successive stage of enlargement, not in different cases only, but in the same identical liver. This variety in their size, in the same organ, may depend in part on their having originated at different periods; but in part probably also, on their growth having advanced with different degrees of rapidity.

129. It would be foreign to our purpose to enter here on an examination of the diversities which cancerous or malignant tumours, as found in different livers, or in different parts of the same liver, may exhibit, in respect of their intimate structure; or on a consideration of the questions how far these diversities depend on origi-

nal differences of composition or structure, on their degrees of advancement, or on accidental complications, such as the super-vention of inflammation, the extravasation of blood, the simultaneous deposition of two or more distinct forms of morbid secretion, &c. Nor does it fall within our plan to notice here the different opinions that have been propounded, as to the precise seat in which the morbid secretion is primarily deposited. These are points, the investigation of which may no doubt be prosecuted very advantageously on the liver, but which would fall more properly to be discussed in a work on general pathology than on practical medicine.

130. In some cases, malignant tumours, developed in the liver, exhibit, to the eye of the anatomist, very characteristic appearances, so that their precise nature can be immediately determined. Thus, several cases have now been recorded in which *melanotic* tumours have been found in the liver, among various other organs infested by them. In other cases, the diseased substance has so much the appearance of brain, as to establish its identity with the tumours termed *encephaloid*. In others it assumes, from its earliest appearance, or in the course of its development, the *hæmatoid* character, in which event fungi may protrude from it either externally on the surface of the organ, or into cavities which form in its substance. In other cases, again, the morbid structure exhibits those characters by which *scirrhus* texture, as occurring in other organs, is now usually discriminated. But after we have set aside those cases in which we are able, with considerable confidence, to fix the character of the morbid growth, it must be acknowledged that no inconsiderable number remains in which it exhibits characters not easily referrible to any recognised form of structural alteration.

131. In conformity with the division of cancerous structures into the hard and the soft, M. Cruveilhier recognises a hard and a soft variety of the disseminated cancerous masses of the liver, differing from one another, as he conceives, 1st, in the *web*, which is cellular and loose in the soft, but dense and fibrous in the hard variety; 2d, in their degree of *vascularity*, and 3d, in the quantity of *cancerous* juice with which they are penetrated, both of which are greater in the soft than in the hard; and, 4th, in their *progress* and *development*, which is, in general, slow in the hard tumours, and rapid in the soft ones. But he acknowledges, that, notwithstanding these differences, it is probable that the hard variety changes, in some cases, into the soft: at all events, these two varieties are frequently met with alongside of one another, and they may both be the seat of a disorganizing process which has for its result the formation of pus, the production of a tubercular or gelatiniform matter, and the conversion of the mass into pulp (*bouillie*) or gangrene. It must, of course, be an object of interest with the practical physician, to ascertain whether these changes in the condition of the structural affection, give rise to, or are accompanied by, any changes in the symptoms, local or constitutional.

132. In disseminated cancer of the liver, the absolute and comparative amount of the morbid masses and the natural substance of the organ, seems to be very different in different cases. M.M. Bayle and Cayol, in their very able article on Cancer (*Dict. des Sci. Med.*), had alleged that a liver which has undergone cancerous degeneration, is *always* found enlarged, its size and weight being sometimes doubled or trebled by the effect of disease. In this case, they add, it usually fills the epigastric region, and extends into the left hypochondrium; its inferior border descends to near the right iliac crest, and its convex surface pushes the diaphragm back on the chest, as high as the fifth, or even the fourth rib. In a large proportion of cases this statement is correct. But M. Cruveilhier has shown that it is not uniformly so, there being great variety, not only in the amount of the heterologous production, but also in that of the parenchymatous structure of the organ. This author represents the proper substance of the liver as being, in some cases, of its natural amount, any increase of size which the organ has undergone corresponding to the size of the tumours. In many cases, however, in which the liver has acquired an enormous size, so as to weigh from 15 to 20 lb., besides the bulk of the tumours, there appears, he says, an increase in the proper substance of the liver itself, to double or treble its ordinary amount. In other cases, again, the liver is atrophied either partially or generally. The partial atrophy may affect one lobe, or only a small portion of the liver. General atrophy may go to such a degree that the liver, though containing a number of tubercles, shall not exceed the natural size of the organ, or shall even be under that size. In some cases of this affection, M. Cruveilhier has found the proper substance of the liver reduced to the sixth, or perhaps even to the eighth, part of its natural amount.

133. The connexion between a cancerous mass and the surrounding hepatic substance, by vessels and cellular tissue, is very various in its degree of closeness. Mr. Wardrop remarked in respect of fungus hæmatodes in the liver, that the "limits of the tumour are always readily perceived, though it is never inclosed in any distinct capsule; for the sound liver contiguous to the diseased portion seems gradually to degenerate into the same structure as that of the tumour, and appears to be inseparably connected with it." M.M. Bayle and Cayol, while they allow that in some cases there is evidently a continuity of substance between cancerous masses and the parenchyma of the liver, allege, that in most cases they appear to be merely contiguous to that tissue; or, at least, to be connected to it only by some vascular prolongations; it being possible to separate them without difficulty with the handle of the scalpel, while the cavity which contained them is left perfectly smooth. The texture of the liver around these masses, they conceive, therefore, is almost always perfectly healthy.

134. Cancerous tumours in the liver are sometimes so seated as to compress more or fewer of its several classes of vessels, san-

guiferous or biliferous. M. Cruveilhier thinks that some cases of *partial* atrophy of the liver accompanying this morbid degeneration, may be attributed to the compression of the secondary arterial and venous branches; and that some cases in which the organ has undergone *general* atrophy, may have depended on compression of the large vascular trunks. It is probable that the compression which these masses exert on the venous system contributes, at least, to the production of the ascites and anasarca which attend this disease, particularly in its advanced stages; and it seems well ascertained, that the jaundice which so frequently occurs in this form of disease, is the consequence of the compression of the larger excretory gall-ducts. M. Cruveilhier affirms that he has never observed cancer of the liver accompanied with jaundice, without finding it to depend on a compression of this kind.

B. STRUCTURAL ALTERATIONS OF THE BILIARY PASSAGES.

135. We have now to consider the structural alterations to which the biliary passages, viz., the tubuli biliferi, the gall-ducts and gall-bladder, are subject.

GALL-STONES.

136. The most common of these is the presence of gall-stones, of which we had formerly (45, 46) occasion to mention the composition and mode of formation. At present, therefore, we have to view them simply as foreign bodies, varying in their size, number, and seat, and, according to these circumstances, occasioning more or less impediment to the flow of the bile.

137. Gall-stones may form in all parts of the biliary passages — in the tubuli, in the hepatic ducts and its divisions, in the cystic duct, in the gall-bladder, and in the common duct. Most frequently, however, their first formation seems to take place either in the biliary tubuli or in the gall-bladder, though, being subsequently conveyed into one or other of the ducts, they may undergo enlargement there.

138. It has been imagined that gall-stones might be formed also, exteriorly to the biliary passages, in the substance of the liver itself; but this is an error which seems to have arisen, in part at least, from their being occasionally found in portions of the biliary tubuli, which, in consequence of adhesive inflammation of their inner parietes, have been formed into separate sacs, so as, when cut through, to present the appearance of cysts developed in the substance of the liver, around the calculi that are lodged in them.

139. In whatever portions of the biliary passages gall-stones are formed, they are liable to be moved onward, in the course of the natural flow of the bile, to the gall-bladder or to the duodenum. Occasionally, however, cystic calculi do not lie loose in the gall-

bladder, being sometimes lodged in pouches or ulcerations of greater or less depth; and sometimes adherent, inorganically it must be presumed, to its inner surface. (Batt, Edin. Med. Surg. Jour. i. 109.)

140. In respect of the number in which biliary concretions may form, and of the size which they may individually attain, there subsists, as is well known, the greatest variety. The gall-bladder may contain a single calculus, filling its whole cavity, and little if at all inferior to the natural dimensions of that cavity; or it may contain several thousands of very minute dimensions.

141. It is obvious that the physical influence of biliary concretions in impeding the exercise of the biliary functions, must depend, in a great measure, on the seat which they occupy. The cystic duct may be obstructed, and the gall-bladder filled with calculi, and yet the bile reach the duodenum through the hepatic and common ducts; whereas, if the hepatic duct be obstructed, the bile can reach neither gall-bladder nor duodenum; and if it be the common choledoch duct that is the seat of obstruction, though the bile may reach the gall-bladder, it cannot reach the duodenum, at least by its natural channel.

142. It is to be kept in mind, too, that the degree of obstruction produced by a calculus in the gall-ducts, is not uniformly proportional to its size. A small calculus lodged in the common orifice of the choledoch and pancreatic ducts, may be sufficient to occasion complete retention of bile; while one or more calculi of larger dimensions, if lodged in portions of the duct that admit more readily of dilatation, may allow of the bile passing between themselves and the parietes of the duct. It is in this way only that we can explain such an occurrence as a gall-stone, more than half an inch in diameter, being found plugging the common duct, without jaundice having occurred, and without any preternatural accumulation of bile in the biliary passages. (Cruveilhier, 12me Livr. Pl. V.)

143. Biliary calculi of very large dimensions are occasionally voided by stool, during life, or found in the alimentary canal, on post-mortem examination. In regard to such calculi, the inquiry naturally presents itself, whether the gall-ducts are capable of such distention as to allow of solid bodies of so large dimensions passing through them; and if this be determined in the negative, whether the calculi can have entered the alimentary canal of smaller dimensions than they have subsequently attained; or whether they must be supposed to have passed into the intestines, of the dimensions in which they are ultimately found, but by some preternatural route. It seems absurd to suppose that a biliary calculus, after entering the alimentary canal, can increase *quasi* a biliary calculus, though it is conceivable enough that it might form the nucleus of an *intestinal* concretion where there exists a disposition to such a formation. The bile with which it can come into contact in the intestines, is altered in its qualities, and transformed into an emulsion, and is no longer in circumstances favourable to the precipitation and crystallisation of its insoluble matters,

being subjected to the peristaltic motion which is constantly conveying it, with the remains of the food, to the lower extremity of the alimentary canal.

144. That, in some cases, the presence of large biliary concretions in the intestinal canal, is to be accounted for by their having passed into it, from the biliary passages, by a perforated aperture of communication, does not admit of question;* and that this is the probable explanation of many cases in which no suspicion of a gall-stone having passed from the biliary passages to the intestines, had been excited previously to the time of its being voided, seems probable. But it may be questioned whether we have data for fixing the greatest dimensions to which the gall-ducts are capable of dilating, or consequently for determining in particular cases, independently of post-mortem examination, whether a biliary cal-

* 1. "Mr. Cline having found," says Andree, p. 45, "the gall-bladder adhering to the duodenum, and a direct aperture from it into that intestine (which parts are among his anatomical preparations), it appears that in this course a stone of any dimensions, confined in the gall-bladder, might take its passage directly into the gut, and be discharged by stool." 2. M. Cruveilhier quotes a case in which, the duodenum and ascending colon being both adherent to the fundus of the gall-bladder, a perforation, allowed of the easy introduction of the finger, established a communication between the cavities of the duodenum and of the gall-bladder. A biliary calculus, of a triangular pyramidal form, six lines in height, was inserted by its base into that aperture, the surface of which was smooth and continuous. 3. In a case of biliary calculus passing from the gall-bladder into the small intestine by a fistulous communication, and inducing fatal symptoms of internal strangulation, of which a short notice is given by M. Reynaud, it was found that solid adhesions existed between the gall-bladder and the duodenum, and a large loss of substance, limited by these adhesions, occasioned a communication between the two cavities. The perforation did not appear of long standing. The upper part of the small intestine had undergone, throughout an extent of several feet, a considerable degree of dilatation; the lower part was diminished in diameter. At the upper part of the small intestine was an oblong tumour, very hard, of the size of a pigeon's egg, forming an obstacle to the course of the fecal matters. This tumour was a biliary calculus. 4. In a case related by Mr. Brayne of Banbury, in which a patient survived a year and a half after passing a gall-stone $1\frac{3}{4}$ th inch in its greatest, and $1\frac{1}{8}$ th inch in its shortest diameter, it was found on dissection, that the cystic and hepatic ducts were of the usual dimensions, but the gall-bladder was smaller and very much thickened, and had formed a strong adhesion, about the size of a shilling, to the duodenum, close to the pylorus. There was no uncommon appearance of vascularity; but a communicating aperture, large enough to admit a crow-quill, was discovered in the centre of the adhesion." Mr. Brayne thinks there can be no doubt that the aperture in the adhesion was once large enough to give passage to the stone. (Med. Chir. Trans. xii. 255.) Had the patient's life been still farther prolonged, might not the communicating aperture have become altogether closed, if not entirely disappeared? Thus, 5. Walter mentions a case in which the fundus of the gall-bladder, having formerly ulcerated into the colon, on which it rests, was so firmly attached by cellular tissue, that the aperture produced by the ulceration was quite shut up, and the gall-bladder again appeared entire and uninjured. 6. Dr. Carswell has represented a case of præternatural communication between the gall-bladder and duodenum, at the orifice of which there were found, on examination after death, two small gall-stones. Whether any had passed during life, and if so, of what size, is not recorded. (Atrophy, Pl. III. Fig. 3.)

culus, passed by stool, had found its way into the intestinal canal by natural or by preternatural passages. Few dissections, we suspect, have been made of cases in which very large calculi have been voided, for the purpose of ascertaining by what route they had found their way into the bowels.

145. Besides making their way into the alimentary canal, and being discharged from thence by stool, or, as sometimes happens, by vomiting, biliary concretions may be discharged externally, by producing abscess and ulceration in the coats of the biliary passages, particularly of the gall-bladder, and in the parietes of the abdomen. A case has recently been recorded in which a biliary calculus is said to have been discharged by the urethra.

ACYSTIC ENTOZOA.

146. In the gall-ducts and biliary tubuli of the liver of the sheep, and of many other animals, there is very frequently found a species of entozoon, popularly known under the name of the liver-fluke, and to which naturalists have assigned that of the *distoma hepaticum*. Several cases have been recorded in which this, and another species of the same genus, the *lanceolatum*, have been said to be found in the human subject; and some of these cases seem to rest on such authority as to be entitled to credit. Many, however, who have been very extensively engaged in entozoological inquiries, have failed to detect the distoma in man; so that, admitting the genuineness of some of the cases recorded, it must still be regarded as of exceedingly rare occurrence.

147. In post-mortem examinations, one or more intestinal worms are occasionally met with in the biliary ducts, or perforating the substance of the liver. It has generally been believed that, in these cases, the worms had passed from the alimentary canal into the place, or places, in which they are found, subsequently to the death of the patient. But in some cases in which no other morbid appearances have been detected, in any part of the body, to account for the production of death, or of the symptoms by which it was preceded, pathologists have been inclined to think that this migration must have been effected whilst the patient was alive. Two obstacles to the entrance of intestinal worms into the biliary-ducts, during life, have, however, been suggested; 1st, the bile, as being an element in which it is conceived that intestinal worms could not live; and 2^d, the irritability of the ducts and of their intestinal orifice, which, it is conceived, would oppose a mechanical impediment to their entrance and progress. It may be questioned to what weight these objections are entitled, separately or conjointly; and probably the consideration which principally indisposes pathologists to admit, that intestinal worms can pass into the biliary ducts of a living person, is the fact of their so seldom being met with in that situation, in post-mortem examinations.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BILIARY PASSAGES.

148. The mucous membrane lining the gall-bladder and the larger biliary ducts, is liable to be attacked with inflammation of a more acute or of a more chronic character, which produces the same effects upon it as on mucous membrane in other parts of the body, viz., its vascular turgescence and general swelling from serous or other interstitial effusion; and, when the inflammation is chronic, its more permanent thickening and induration. The inflammation may be confined to a more or less circumscribed point of the gall-bladder or of the ducts, or it may spread over the whole of their inner surface.

149. It has been alleged that, in a large proportion of the cases in which inflammation occurs in the lining membrane of the gall-bladder and ducts, it has extended into them from the duodenum. May it, in any case, be derived from the substance of the liver, or may it extend from the ducts into the substance of that organ? It certainly has been remarked, that, in acute inflammation of the gall-bladder (cholecystitis), the substance of the liver is almost always red; and that, in the chronic form of this disease, it is not uncommon to find hepatic abscesses or tubercles, and other degenerations existing simultaneously.

150. It is obvious that inflammatory swelling of the mucous membrane of the *gall-bladder* cannot, by itself, produce any influence on the course of the bile; but that, in proportion to the degree of swelling which the lining membrane of the *gall-ducts* experiences, will be the impediment to the passage of the bile into the gall-bladder and duodenum; and that, where this inflammatory affection is limited to a particular portion of these ducts, as to the hepatic, or choledoch, or to the cystic, the mechanical obstruction produced by it will affect the flow of the bile in precisely the same manner as a calculus occupying the same position. (141.)

151. There can be no doubt that the mucous membrane of the *biliary tubuli* may take on inflammation, as well as that of the larger ducts; and it seems probable that inflammation of the substance of the liver will be communicated to them more readily than to the latter. M. Cruveilhier mentions that he has repeatedly found, in examining the livers of new-born children, through which tubercles were scattered, that these tubercles contained a cavity filled with concrete bile; and he is, therefore, disposed to regard them as the consequence of inflammation of the biliary tubuli, which, being obliterated, from space to space, by adhesive inflammation, have been converted into biliary cysts. These cysts, which have also been observed in adults, may acquire a considerable size.

152. Inflammation of the mucous membrane of the gall-bladder

very seldom terminates in a collection of purulent matter. In the few cases in which this occurs, it seems to be most frequently attributable to the presence of biliary calculi. These, by blocking up the gall-ducts, prevent the pus secreted by the mucous membrane from flowing into the duodenum : and thus the gall-bladder, distended with purulent matter, comes to form a tumour in the hypochondrium. In other cases in which suppuration of the gall-bladder has occurred, it has appeared to depend on the existence of an abscess in the liver preventing resolution of the cystic inflammation. Distension of the gall-bladder with purulent matter may cause adhesion of its external surface to the abdominal parietes, and the contents may be eventually discharged externally.

153. Under the same circumstances, probably, in which suppuration is liable to supervene to inflammation of the mucous lining of the gall-bladder, ulceration may occur in that membrane. Sometimes the ulceration amounts merely to superficial erosion ; sometimes it penetrates through the other coats, and terminates in perforation. Sometimes it occupies only a very small spot ; in other cases it is extended over a considerable extent of surface ; and sometimes there are numerous distinct ulcers in different parts of the sac.

154. If perforation of the gall-bladder shall occur without its having previously contracted adhesions with the adjacent parts, an effusion of bile will take place into the cavity of the abdomen, followed by peritonitis terminating speedily in death. But in many of the cases in which perforation of the gall-bladder occurs, it is preceded or accompanied by the formation of such adhesions. Sometimes the point of adhesion corresponds to the anterior parietes of the abdomen, and, in this case, the perforation of the gall-bladder gives rise to the formation of an abscess projecting into the right hypochondrium ; and when this opens spontaneously, or is opened by art, a biliary fistula is produced, by which gall-stones, as well as purulent matter, may be discharged externally. In other instances, the gall-bladder contracts adhesions with the transverse colon, with the duodenum, or even with the stomach ; and when its perforation occurs, the matters which it contains, solid and fluid, entering the corresponding portion of the alimentary canal, are discharged by stool or by vomiting.

155. The parietes of the *gall-ducts*, in like manner, may undergo softening and ulceration, and ultimately perforation, followed by an effusion of bile into the cavity of the peritoneum. The perforation of a gall-duct, as is observed by M. Andral, sometimes happens behind a point at which the duct is obliterated, either in consequence of disease of its coats, or of the lodgment of a gall-stone. "Sometimes," observes Dr. Powell, p. 104, "the long continued impaction of a gall-stone in a duct is productive of inflammation and ulceration therein, and has all the lasting inconveniences which such affections produce ; and it has happened that the duct

has burst during such impaction, and necessarily excited a train of symptoms, from its discharge into the cavity of the abdomen, which have soon proved fatal.”

156. In the healing of ulcerations of the mucous membrane lining the gall-bladder or ducts, a greater or less degree of contraction of their parietes is liable to occur, producing shrinking of the bladder, and stricture or closure, or occlusion, as it has been lately termed, of the ducts. M. Louis mentions that, of eight cases in which the communication of the gall-bladder with the cystic duct was cut off by obliteration near its neck, in five there was more or less affection of the mucous membrane, and in these the gall-bladder was very diminutive, from twelve to eighteen lines in length, and contained only a small quantity of mucous or puriform fluid. In the other three cases in which the mucous membrane was not ulcerated, or very slightly so, the gall-bladder is said to have been of a more or less considerable size, and distended with a fluid resembling white of egg or albumen. And, of nine other cases of diseased gall-bladder, he found that in two, in which its size was diminished, there was in like manner more or less alteration of the mucous membrane. It would appear from M. Louis's results, that the number of cases in which obliteration at the neck of the gall-bladder is accompanied with, or independent of, the existence of calculi, is nearly equal. (l. c., p. 393.) The hepatic and choledoch ducts, as well as the cystic, may be the seat of occlusion dependent upon cicatrisation.

DEVELOPMENT OF TUMOURS (ENLARGEMENT OF GLANDS?) IN THE CAPSULE OF GLISSON.

157. Mr. Twining had the merit of directing the attention of pathologists in a particular manner to an organic affection which seems to prove, not unfrequently, the primary cause of obstruction to the bile in its passage to the liver, viz., the development, in the capsule of Glisson, of tumours varying in size from that of a grain of barley to that of a bean. “Two small bodies,” says this writer, “can always be found by careful dissection, which, from their structure, appearance, and uniformity of situation, I am inclined to believe are absorbent glands. One of them is situated near the termination of the gall-bladder in the cystic duct; the other at the upper part of the ductus communis choledochus. Enlargement of these bodies with inflammatory excitement about the capsule of Glisson, may cause closure of the biliary ducts. I have found the ducts obliterated exactly at the point where these enlarged glands were causing pressure. If,” continues Mr. T., “my view of the influence of these parts in disease be correct, we shall have a satisfactory explanation of one mode in which transient obstructions to the flow of bile into the intestine are produced from temporary irritation of these glands, on the occasion of disorders in the vicinity;

and we see a distinct reason for obliteration of the cystic or of the common duct, in the chronic disease of old drunkards, which is just the description of subjects in whom the closure of the ducts most frequently takes place."

INFLAMMATION OF THE SEROUS COAT OF THE GALL-BLADDER.

158. The peritoneal coat of the gall-bladder occasionally experiences inflammation, terminating in the effusion of organizable lymph upon its surface. Mr. Twining states, that, in persons dying soon after their arrival in India, the gall-bladder is commonly found distended with bile, having produced, by its pressure, enlargement and deepening of the sulcus in which it is lodged. But, in persons who have been long in India, it is found decreased in size, and disproportionate to the large sulcus in which it is lodged; and, in many of these cases, it is covered by a false membrane which sometimes agglutinates it to adjacent parts. The formation of this false membrane Mr. Twining attributes to inflammation being induced by frequent repletion and habitual over-excitement of the gall-bladder and neighbouring parts; and he accounts for the diminution of the gall-bladder by the shrinking which this new membrane experiences during its organization.

159. If, instead of being confined to the peritoneal surface of the gall-bladder, the effusion of coagulable lymph should extend to neighbouring surfaces, adhesions, more or less intimate, will be produced; and, if the surfaces be at some distance, the membranous bands, in shortening during and subsequently to their organization, will produce an approximation between them and the gall-bladder. In this way, membranous bands come sometimes to be formed between the gall-bladder and the duodenum, which may produce a considerable degree of constriction of that portion of the alimentary canal, and give rise to symptoms simulating those of organic disease of the pylorus. This approximation seems to be attended with a proportional shortening of the biliary ducts.

STRUCTURAL ALTERATIONS OF THE CELLULAR AND FIBROUS COATS OF THE GALL-BLADDER.

160. It is probable that many of the morbid alterations to which the coats of the gall-bladder are subject, — as, for example, the formation of cartilaginous or bony plates, or of earthy or stony concretions, originate in the sub-mucous or sub-peritoneal cellular coats. Appearances have sometimes been met with, which would lead to the belief that inflammation of this viscus had had its primary seat in the sub-mucous texture, and had either remained confined to that coat, extending over a smaller or larger portion of

it, or spread to the membranes on each side. Serous effusions into the cellular inter-coats have been observed to such an extent as to add considerably to the thickness of the parietes; and abscesses have been found in the same situation. Louis mentions that of the seventeen cases of diseased gall-bladder which had fallen under his observation, in two, the sub-mucous membrane was hard, thick, and scirrhus; in another case, it was merely thickened.

161. Whatever be the nature of the coat of the gall-bladder, which is interposed between its sub-mucous and its sub-peritoneal cellular membrane, in the state of health, the existence of muscular fibres in that situation, in some cases of disease, does not admit of doubt. M. Louis mentions, that, in one of his cases in which the mucous membrane was destroyed throughout a great extent, there were found, beneath the sub-mucous cellular coat, fibres of a muscular appearance, resembling those of the fleshy coat of the stomach; and M. Andral notices the appearance of muscular fibres in the coats of the gall-bladder as one of the changes which it is liable to undergo in hypertrophy. "In this state," says he, "the folds of the mucous membrane disappear; a condensed cellular tissue, resembling fibrous texture, is interposed between the mucous and the serous coats; and lastly, in this cellular tissue I think I have found, in such a case, true fleshy fibres. In like manner," he adds, "in many points of the economy, we find that one of the effects of hypertrophy is to make muscular fibres appear where, in the healthy state, they are not observed in man, but where they very probably exist in a rudimentary state."

162. When cancer exists in the liver itself, the gall-bladder occasionally participates in this morbid degeneration. Primary cancer of the gall-bladder and gall-ducts must be a comparatively rare occurrence: but M. Durand Fardel states, that, within a short space of time, he has met with three instances in which the gall-bladder, and one in which the choledoch duct, were primarily affected in this manner, without the structure of the liver being in any way altered. In two of the cases, however, the corresponding portion of the colon participated in the disease. (*Arch. Gener. Med. ser. viii.*)

ENLARGEMENT OF THE GALL-BLADDER, ETC.

163. Enlargement of the gall-bladder may be produced by an accumulation, in its cavity, either of bile or of some fluid secreted from its own internal surface. It may consist of simple distension, or there may be an increase of its substance proportional to the increase of its size. An accumulation of bile in this cavity is found to depend, in some instances, on the existence of a mechanical obstruction to its passage into the alimentary canal; but, in other

instances, it arises independently of such obstruction. This accumulation has occasionally been found to amount to twelve pounds and upwards, the dimensions of the sac being, of course, proportionally increased, so as to occupy a very considerable portion of the cavity of the abdomen.

164. When, from impaction of a concretion or any other cause, the passage of the bile from the liver into the gall-bladder is prevented, this receptacle, as Dr. Powell observes, is not, in general, found empty, but distended to about its usual size, or something more, by a thick colourless mucous fluid, which is commonly coagulable into a firm mass by heat, by acids, and by alcohol; and which, except that the coagulum seems denser, very accurately resembles serum. This fluid is freer from any tint or admixture of bile, in proportion to the duration of the obstruction; and it appears to be the unmixed secretion of the internal surface of the gall-bladder. From a case observed by Dr. Powell, it seems probable that the mucous secretion of the gall-bladder may experience deviations from its usual characters. This fluid, accumulating in large quantity in the gall-bladder, may, as Walther remarks, distend it to such a degree as to thin its coats, and render it as pellucid as the bladder of fishes. To this state of the gall-bladder, it has been proposed to apply the term *Cholecystonchus*.

165. A mechanical obstacle to the flow of bile into the intestinal canal, wherever situated, may occasion dilatation not only of the gall-ducts, but likewise of the biliary tubuli; more particularly if, from the obstacle being in the hepatic duct, the entrance of the bile into the gall-bladder is prevented. The distention of the tubuli may be to such a degree as to communicate a sensation of fluctuation to the fingers, applied to the surface of the liver.

166. We have recently alluded (152) to the circumstances under which an accumulation of pus may occur in this cavity.

167. In a case related by Dr. S. F. Simmons (*Med. Communic.*; London, 1784, i. 101), a tumour, occupying principally the left side of the abdomen of a woman, was found, on dissection, to be formed by an immense sac, containing sixteen pints of hydatids of various sizes, which, from its position and other circumstances, was conceived to be the gall-bladder. Walther also mentions his having once met with hydatids in the cavity of the gall-bladder; but he regarded this a very rare morbid appearance, and, as far as he remembered, one that had never before been described. (*Annot. Academ.*)

168. Several instances have been recorded, in which the gall-bladder has been found greatly distended with air; but we are not aware of this form of pneumatosis having ever been recognised during life.

DIMINUTION OF THE GALL-BLADDER, ETC.

169. We have already adverted to two circumstances under which the gall-bladder is liable to experience a diminution of its size; viz., first, When cicatrisation occurs subsequently to ulceration of its mucous coat (156); and second, When a layer of coagulable lymph has been effused on its serous surface, and has become organised (158). But there seem to be other circumstances in which diminution of the gall-bladder may take place.

170. If the biliary secretion is very deficient, or if some obstacle prevents its reaching the gall-bladder, and the secretion from its internal surface is not sufficient to maintain its distension; or if, from the existence of a preternatural communication, the bile passes directly from this sac into the intestinal canal, then in a shorter or longer time, the gall-bladder will undergo diminution of its capacity. The state of its coats, in these cases, is very various, according, probably, as they shall be more or less affected with inflammation; being sometimes so soft and thin that they tear on being touched, and, at other times, much thickened, and harder than natural.

171. It seems to be under circumstances such as have been just alluded to, that the gall-bladder occasionally undergoes what is called a cellular transformation. Richter found, in the body of a woman who died in a most intense degree of jaundice, that the gall-bladder was wanting, and, in its place, there was merely a membranous substance, without a cavity, and of the circumference of a sixpenny piece. And M. Andral relates the case of a man who died some months after biliary calculi had been discharged externally by an abscess opening on the side, and in whom no trace of the gall-bladder could be found, there being nothing in its sulcus, except a mass of cellular tissue of considerable density. From the choledoch canal, there arose a duct, which, in situation and direction, perfectly resembled the cystic; but, after a course of a few lines, it could no longer be followed, in consequence of its terminating interiorly in a cul-de-sac, and losing itself in the cellular tissue. (*Anat. Pathol.* i. 241.)

172. Independently of diseases originating in its own textures, the gall-bladder, in some instances, becomes involved in a supuration of the neighbouring parts, between which adhesions, and sometimes communications, are established, as the liver, stomach, duodenum, and colon; and, in such an event, both this membranous cavity and its ducts may be removed by interstitial absorption, so that, on examination after death, no trace of them shall be discoverable.

SECTION IV.

INJURIES OF THE BILIARY ORGANS.

LACERATION OR RUPTURE OF THE LIVER.

173. Laceration of the substance of the liver is by no means an uncommon effect of falls, and even of falls by which no external marks of injury are produced upon the parietes of the chest and belly. "On the morning of the 1st January 1824, three soldiers, in attempting to get out of Edinburgh Castle, mistook their way in the dark, and precipitated themselves over the perpendicular side of the rock. They were found dead the next morning, and the livers of the whole of them were found, on dissection, to be lacerated." (Dunlop's Notes to Beck's Medical Jurisprudence.)

174. Simultaneously with the rupture of the liver, occasioned by a fall, there may occur fracture of the ribs, or rupture of some of the other parenchymatous abdominal viscera, as of the spleen or pancreas. In other cases, the cranium and brain are the parts which suffer most in injuries producing rupture of the liver. M. Richerand, in support of the particular views which he entertained respecting the formation of abscesses of the liver after injuries of the head, has mentioned (*Nosographie Chirurgicale*, ii. 227, edit. 1808) some cases in which individuals whose skulls had been fractured in consequence of their falling from a height, and who died within twenty-four hours after the accident, were found to have their livers also lacerated. He caused about forty dead bodies to be precipitated from a height of about eighteen feet, and found that in these bodies the brain and the liver were always more or less injured, the latter presenting, in some instances, lacerations of considerable depth. No viscus, he says, without excepting even the brain, suffered more than the liver from the violent commotions produced by the fall.

175. The extent of the laceration is not always in proportion to the apparent severity of the injury. Dr. Pearson has related and delineated (Trans. of the Coll. of Phys. of London, iii. 377) a case of very extensive laceration of the liver, which strongly illustrates this point. While a young man was ascending a ladder, the sixth step, on which he was standing, broke, and he fell with his right hypochondrium and epigastrium upon the edge of a pail which he had in his hand. Death happened ten hours after the accident. On post-mortem examination, the right lobe of the liver appeared divided, in an oblique direction, through its whole substance, from its extremity on the right side, to the border of the left lobe; the two portions being connected only by the vena cava and the trunks

of the *venæ cavæ hepaticæ*. Morgagni, observes Dr. P., relates four or five instances of a division of the liver by external or mechanical causes, without any great injury of the integuments; but they were either much smaller ruptures than that now described, so that the patients lived several days; or they were equally extensive and as promptly fatal, but from a far more powerful cause.

176. Rupture of the liver, and that of great extent, has often been produced by the wheels of a carriage passing over the body, sometimes fracturing the ribs, and at other times producing the rupture of the liver without this fracture. (1) Dr. J. Green of Lowell, Massachusetts, has related (*American Journal of Medical Science*, vi. 539) a case of rupture of the liver, occurring in a lad of 19 years of age, which was occasioned by being thrown from a chaise in quick motion, by driving against a wagon. He fell with violence, and the wheel (of chaise or wagon?) was seen to pass over his abdomen. Death followed in fourteen hours. The abdomen was extremely tense, containing two quarts of dark fluid blood. A rent was found in the liver commencing at a point in the right circumference of its great lobe, more than eight inches in length, and of such depth as nearly to have separated the half of that lobe from the organ; shorter rents ran in radiating directions from the same point, showing a great extent of injury. Considerable portions of the peritoneal covering of the organs were torn off, rolled up, and loose in the cavity of the abdomen. The parietes over the place of the injury were perfectly sound, with no apparent bruise or external mark of any kind. (2) Within a month of this accident, a stage-coach ran over a man in the same street, and almost instantly killed him, the wheels passing over his body. Upon examination it was found that large fractures of the liver were the chief internal injury, although in this case several ribs were broken. (3.) In the *Midland Medical and Surgical Reporter*, ii. 76, there is related a case of rupture of the liver, occasioned by the passing of a wheel over the abdomen, the subject of which survived for 52 hours. The abdomen was found on post-mortem examination full of blood, about a pint and a half being absorbed by a sponge. At the posterior part of the right lobe of the liver was a large lacerated wound. The bowels were inflamed.

177. In whatever way rupture of the liver may have been produced, if it be very extensive, an effusion of blood will necessarily take place, occasioning, according to its quantity, and the length of time the patient lives, a greater or less degree of distension, which has usually its seat on the right side of the abdomen. When the injury done to the liver is less severe, we generally become acquainted with its existence before death, in the cases which have a fatal termination, either by the pain which the patient feels in one or both shoulders, or by the discoloration of the skin which usually accompanies any injury of the biliary organs.

WOUNDS OF THE LIVER.

178. With a view to elucidate the question, formerly much controverted among medico-legalists, how far wounds of the human liver, with or without loss of substance, are necessarily fatal, or may be recovered from, experiments have repeatedly been performed on the lower animals, in the way of dividing, to a greater or less depth, the substance of this organ, or of removing a portion of it with the knife or by ligature. Kaltschmidt has related some experiments of this kind performed upon dogs, which had a successful termination. (Haller's Coll. Disp. Chir. v.) "From experiments on rabbits lately tried by Dr. Monro," says Dr. Hennen (Mil. Surg. p. 439), "it appears that considerable portions of the liver may be removed without injuring the health of the animal, the wounds cicatrizing as in other parts."

179. But, independently of such comparative experimental trials, it may now be considered as established, by the results of observations in individual cases, that wounds of the surface of the human liver, whether incised, punctured, or gunshot, are not necessarily fatal; though, from the inflammation to which they give rise, they are always attended with a considerable degree of danger. When these wounds penetrate deeply into the substance of the liver, they almost always prove fatal. "A deep wound of the liver," says Dr. Hennen, "is as fatal as if the heart itself was engaged; the slighter injuries are recoverable, particularly if the membrane alone is injured." P. 434. In illustration of the extent to which the liver may be wounded, and the patient nevertheless recover, we may refer to a case of gunshot wound of the liver, mentioned by Saucerotte, in which, on dissecting the patient, who died a considerable time afterwards of a different disease, it was found that the ball had passed through the small lobe about three inches from its inferior border. (*Mélanges de Chirurgie*, p. 377.)

180. In the human subject, as in animals, a small portion of the substance of the liver may be removed without necessarily inducing a fatal result. In Blanchard's *Anatomia Practica Rationalis*, Amsterdam, 1688, we find the case of a soldier who was wounded by a sword in the hepatic region; the wound was succeeded by a profuse hemorrhage and deliquium; on the cessation of the hemorrhage, a morsel of the substance of the liver was removed by the forceps, and after many threatening symptoms, the patient recovered. At the end of three years he died of fever; on dissection, a small portion of the lower part of the wounded lobe of the liver was observed to be wanting, where it had been removed by the cutting instrument; the other viscera were sound. In Schmucker's *Vermischte Schriften*, iii. 156, an interesting case is related of a soldier who, in order to evade punishment, inflicted three wounds on one side of his belly with a knife. Through one

of these a portion of the liver protruded. The surgeon applied a ligature to this portion, and afterwards cut it off. It does not distinctly appear, from the relation of the case, why he should have done so; but this patient recovered after more than three ounces of his liver had been cut away in the manner of an experiment.

181. So far as we are aware, no surgical writer has given a comparison of so large a number of cases of wounds of the liver, falling under his own observation, as Dr. Thomson, in his Report of Observations made in the British Military Hospitals in Belgium, after the battle of Waterloo. "We saw," remarks Dr. T., "twelve cases of wounds of the liver, in which considerable progress towards recovery had been made before our return from Belgium, about ten weeks after the battle. Most of these wounds had two orifices; in some instances, one of the orifices was in the parietes of the chest, and the other in those of the abdomen; in other instances, the orifices appeared to be both in the chest, or both in the abdomen. We saw but two cases in which a single opening existed. (1.) In one of these, there was a considerable discharge through the wound, of a serous fluid tinged with bile, and the patient said he had for some time spat bile on coughing. (2.) In the other, the ball had entered through the anterior extremity of the eighth rib on the right side, and was supposed to be lodged in the spleen, from the pain that was felt in that region; but of this there could be no certainty. In this case, bile, nearly pure, was discharged from the wound for many days; but when we last saw this patient, about eight weeks after he had received the wound, the bilious discharge had ceased.

"We had no opportunity to see, nor were we informed of, any cases in which the bile, either from the liver or gall-bladder, had, in wounds of these parts, been effused into the cavity of the abdomen. (3.) In one singular case of wound of the liver, of which the patient died on the thirtieth day, it was found, upon examination after death, that the ball which had entered the chest at the lower and outer part of the right papilla, had passed through the lower part of the lungs, and the upper part of the right lobe of the liver, and that, entering the abdomen, it had come out of that cavity on the left side of the umbilicus. The injured lung had collapsed, and was covered with an exudation of coagulable lymph. Between the wound on the convex surface of the liver and the peritoneum passing from the inferior surface of the diaphragm to the parietes of the abdomen, a considerable quantity of bile was accumulated in a cavity which resembled an abscess. This bile was prevented from falling into the cavity of the abdomen by the newly formed adhesions with which it was everywhere surrounded.

"Several other instances presented themselves in which the wound of the liver was combined with one of the lungs, and in which bile was discharged through the wound of the thorax. A case has been already mentioned (1) in which the ball was lodged, and in which bile was expectorated on coughing. (4.) In another

case, the ball entered below the scapula, on the right side, and was cut out of the anterior part of the right hypochondrium; a copious glutinous discharge, tinged with bile, made its escape at the posterior orifice. (5.) In another case, a ball had entered about an inch and a half below the last rib on the right side; a bilious discharge ensued, and afterwards empyema supervened. And (6.) in another case, the ball had entered at the lower part of the left side of the sternum, and was cut out at the middle and outer part of the right side. This patient spat blood for two or three days, and had a bilious discharge through the anterior wound, which gradually disappeared. In some instances, the bilious discharge from wounds of the liver was extremely glutinous; in other instances, it had the consistence sometimes of pus and sometimes of serum; and, in others again, it was mixed with considerable quantities of coagulated blood."

182. When wounds of the liver do not terminate immediately by death or by resolution, they may give rise to abscess of this viscus.

RUPTURE OF THE GALL-BLADDER AND DUCTS.

183. Notwithstanding the strength of the gall-bladder, and the thickness of the parts which lie over it, rupture of this bag has been observed to occur, in a few rare cases, as a consequence of external injury. Leseure, in an Inaugural Dissertation, published at Paris in 1824, sur les Ruptures et les Perforations de la Vesicule Biliaire, has referred to five instances of this occurrence, in four of which death succeeded immediately to the blow that occasioned the rupture; whilst in the fifth case, the patient, a child of twelve years, survived the accident four days.

184. In a few cases in which, in consequence of rupture of the gall-bladder or ducts, bile has escaped, to a considerable amount, into the cavity of the abdomen, death has not occurred for a considerable period after the accident, or the patient has even completely recovered from its effects. (1.) Dr. Skeete has recorded (London Medical Journal, vi. 274, 1785) a case of considerable effusion of bile into the cavity of the abdomen, occurring, in consequence of a fall from a tree, in a boy 14 years of age, who survived the accident six weeks. In this case paracentesis was performed on the 24th day, and sixteen pints of yellow fluid were evacuated, containing apparently a very large proportion of bile. The operation was re-attempted on the 37th day, unsuccessfully. On post-mortem examination, bilious fluid to the amount of two or three gallons was found contained in the abdomen, particularly in one large cavity, formed, chiefly, by the right hypochondrium, which had been greatly enlarged by the diaphragm yielding to the pressure of the fluid upwards. The peritoneum surrounding the fluid was everywhere covered with coagulable lymph, bearing some resemblance to a distinct and regular cyst. There were

numerous adhesions of the intestines to one another, and to the peritoneum. In this case, in consequence of the adhesions of the liver to the stomach and neighbouring parts, the gall-bladder and biliary ducts were involved in such a state of confusion, that nothing satisfactory could be ascertained with regard to the exact place at which the injury had been received; so that it must remain a doubt, observes Dr. S., whether the bile was effused into the cavity of the abdomen from a rupture of the gall-bladder or of the biliary ducts. (2.) Mr. Fryer of Stamford has related (*Med. Chir. Trans.* iv. 330) a case of what he regarded as extravasation of bile into the abdomen from rupture of the liver or gall-bladder, in which recovery took place. The subject of this observation was a boy about thirteen years of age, who received a violent blow, from one of the shafts of a cart, on the region of the liver; this was succeeded by pain, and frequent vomiting of bilious matter, with great sinking, coldness of the extremities, and a weak, small, and fluttering pulse. Twenty-one days from the accident, in consequence of the abdomen being very considerably distended with fluid, and his appearance indicating rapid sinking, tapping was performed, by which operation thirteen pints of what appeared to be mere bile were evacuated. The tapping was repeated three times after this, at intervals of twelve, nine, and nineteen days; at the second operation, fifteen pints of the same bilious fluid were drawn off; at the third, thirteen pints of a similar fluid; and at the fourth, six pints only. No examination, however, was made of the nature and composition of the fluid. At the date of the report, ten years after the accident, the patient was a stout young man.

185. Instances of rupture of the biliary ducts are much rarer than those of rupture of the gall-bladder. M. Campaignac, however, has related (*Journ. Hebdom.* 1829, ii. 210) a case, in which a man, thirty-five years of age, who had received a violent blow from a carriage on the right hypochondrium, having died eighteen days after the accident, the left branch of the hepatic duct was found to exhibit, near the lobe of Spigelius, a longitudinal rupture, with unequal borders, capable of permitting the introduction of the end of the small finger. The abdomen contained about six pints of a deep green fluid. The folds of the intestine were united to one another by a half organised false membrane, which lined also the anterior parietes of the abdomen; and other marks of inflammatory action were perceptible.

WOUNDS OF THE GALL-BLADDER AND DUCTS.

186. Wounds of the gall-bladder, in the human subject, have always been considered as fatal accidents. "I have never known," says Dr. Hennen (p. 440), "a patient recover after a wound of the gall-bladder; and, indeed, it is difficult to imagine a case where

such a wound could happen without an effusion of bile into the abdominal cavity, unless adhesion had previously taken place to the parietes." The only authentic case of wound of the gall-bladder not proving fatal that has been recorded, is one mentioned by Parroisse (*Opuscules de Chirurgie*, p. 254) as having occurred to M. Huttier; that, namely, of a man who received a gunshot wound on the internal and lateral part of the right hypochondriac region, and who died, two years afterwards, of thoracic inflammation, when a bullet was found in the gall-bladder.

187. In cases of wounded gall-bladder, the period of time which elapses between the reception of the injury and the occurrence of death, varies in different cases. In a case, related by Waton, in which the gall-bladder was punctured by a bayonet (*Journ. de Med. Militaire*, vii. 550), death occurred in about thirty-six hours. In a case of wound of the gall-bladder related by Sabatier (*Medec. Oper.*, 1796, i. 43), the patient lived three days. And in a case of sword-wound of the gall-bladder related by Dr. Stewart in the *Philosophical Transactions*, the patient lived about seven days. (No. 414, p. 341.)

188. With respect to the causes of death in injuries of the biliary passages, it may be remarked, that when, in cases of rupture of these organs, death occurs immediately or speedily, it may be supposed to be the effect of the shock upon the nervous system, produced by the external violence which occasioned the rupture. But when death occurs, in such injuries, after the effects of this shock must be supposed to have passed over, or when it occurs in wounds of these parts not accompanied by any considerable violence, and not involving any other serious injury, it must be regarded as depending upon the effusion of bile into the sac of the peritoneum.

189. From the results of experiments in which there has been introduced into the abdomen of a living animal, and frequently in such a way as to supersede the necessity of opening the peritoneum, a quantity of bile taken from another healthy animal, it appears that, though this fluid is rapidly absorbed, and though it does not necessarily produce fatal effects, yet it gives rise to severe inflammation of the peritoneum, attended with very violent symptoms, and most generally terminating in death.

190. These experiments, however, seem to warrant the conclusion that, in cases of rupture, and particularly of wound of the gall-bladder, it is probably not so much the original escape of bile occurring at the time of the injury, which brings about the fatal termination, as its continual filtration into the peritoneal sac, whereby the quantity is augmented, and the irritation is increased and permanently maintained. This conclusion necessarily suggests the inquiry how far surgery can afford any aid in arresting the escape of bile in injuries of this description. (Campañac, u. c.)

191. With a view to the elucidation of this question, it may be remarked, that numerous experiments have been made on the biliary passages in the lower animals, which tend to show, that

considerable injury may be inflicted upon their parietes, without death necessarily arising, provided the continued escape of bile into the sac of the peritoneum be prevented. M. Herlin, a navy surgeon, relates (*Journ. de Med.* xxvii. 463) some experiments which he made with regard to extirpation of the gall-bladder in cats and dogs. The animals not only lived after being subjected to this operation, but seemed healthy. M. Herlin made an incision in the abdomen of a cat, and, having laid hold of the gall-bladder, tied it at its neck. He then opened it, and allowed the bile which it contained to escape into the abdomen. The wound of the abdomen was then stitched up. The animal experienced no particular uneasy symptoms except vomiting, which lasted only for a short time, and in less than fifteen days it was perfectly cured. It recovered its appetite, ate of everything as usual, and was, in all other respects, in its ordinary state. The body was opened before, and examined by, M. Petit. He found the neck of the gall-bladder tied, and its sac, the wound of which had cicatrised with the parts in the neighbourhood, partly filled with a clear mucous fluid. M. l'Anglas repeated this experiment on two dogs, and extirpated the sac of the gall-bladder, after having tied its neck. These two animals recovered.

192. More recently, M. Campaignac has performed on two dogs the experiment of applying a ligature to the neck of the gall-bladder; and, in both of these, the wound underwent cicatrization. The one was killed on the 26th day, and the other about six weeks, after the operation. M. Campaignac also applied a ligature so as to inclose a portion of the parietes of the gall-bladder, and then cut it off. On killing the animal six weeks afterwards, there was found in the place of the ligature a firm and regular cicatrix.

193. Of late years, physiologists, in their attempts to ascertain the influence which the bile exercises over the process of chylication, have performed the experiment of tying even the choledoch duct, in several species of animals, young and adult. Some of these animals have survived the operation sufficiently long to prove that its performance is not necessarily fatal in itself. Such was the case with the young cats experimented on by Sir Benjamin Brodie. (*Brande's Journal*, xiv.) Of the adult animals operated on by Magendie, however, the greater number died of the consequence of opening the abdomen, and of the operation necessary for tying the duct. (*Elem. de Physiol.* 2d edit. ii. 117, note.) Of three young cats operated on by Mr. Mayo one was killed a few hours after the operation; a second died within 50 hours, and the third was killed three days after the operation. An adult dog in which the duct had been tied, was found dead on the second morning of the experiment. Of two young dogs on which the same experiment was performed, one died, the other was killed about 48 hours after the operation. (*Lond. Med. Phys. Journ.* Oct. 1826.) Tiedemann and Gmelin found several dogs whose choledoch duct had been tied, to survive the operation. (*On Digestion.* Fr. transl. ii. 49.)

194. Not only may animals survive the immediate effects of ligature of the choledoch duct, but nature may, in those which survive, restore, by a reparatory process, the function of the parts. In the experiments performed by Sir Benjamin Brodie with a view to ascertain the effects resulting from ligature of the choledoch duct, he found in several instances that, on destroying the animal on which this operation had been practised, at the end of seven or eight days, and exposing the cavity of the abdomen, and then making an opening into the duodenum he could, by compressing the gall-bladder, cause the bile to flow out of the orifice of the choledoch duct in a full stream, in spite of the ligature. On further dissection, he found that a mass of albumen (coagulable lymph), which had been effused, adhered to the choledoch duct, above and below the ligature, and to the neighbouring parts, and enclosed a cavity in which the ligature was contained. The pressure of the ligature had caused the duct to ulcerate, without adhesion of the surfaces that had been brought into contact, taking place; and the ligature, having been separated from it by ulceration, lay loose in the cavity formed by the albumen which had been effused around it. The bile could be made to flow into this cavity from the upper orifice, and out of it by the lower orifice of the choledoch duct; and thus the continuity of the canal intended for the passage of the bile was restored. It is still more remarkable, observes Sir Benjamin, that the same thing happened even when two ligatures had been applied on the choledoch duct at some distance from each other. The physiologist, continues this scientific surgeon, will not fail to observe the difference between the effects produced by a ligature applied to an excretory tube, and a ligature applied to an artery or vein. MM. Tiedemann and Gmelin observed the same phenomenon in the experiments which they made on ligature or division of the choledoch duct in dogs. They found it re-established by the 13th, 20th, and 26th days after the operation.

CHAPTER II.

OF THE CAUSES OF MORBID ALTERATIONS IN THE FUNCTIONS AND STRUCTURE OF THE BILIARY ORGANS.

195. According to systematic arrangement, the remote causes of the diseases of the biliary organs should be divided into the predisposing and the exciting; but in respect of these, as of other classes of diseases, it is abundantly proved, that this distinction is rather nominal than real. The same agent which, operating in a weaker degree, or for a shorter period of time, produces merely predisposition to liver disease, should it operate in greater intensity, or for a longer period, may induce actual disease. Or two or more agents, any one of which separately would produce mere predisposition, may, when operating conjointly, act as exciting causes. It would be of greater importance, in considering the causes of the diseases of the liver, to be able to distinguish between those that act primarily on that organ in inducing disease, and those which act upon it only secondarily, through the medium of some other organ in which they primarily excite disease, as, for example, through the medium of the stomach, or other portions of the alimentary canal. But this seems to be a matter of very great difficulty. A late French writer on the diseases of the liver, has, indeed, in a very summary manner, relieved those who may be disposed to repose their faith on his judgment, from all difficulty on this head. According to M. Bonnet, when hepatic irritation is *primary*, it must owe its production to one or other of the following causes: viz., a blow or fall on the right hypochondriac region, a wound penetrating the abdomen, or a violent succussion in the vertical line of the body, such as that which results from a fall on the feet, hips, or knees. With the exception of cases depending on these causes, and on mechanical congestion, hepatic irritation is, according to M. Bonnet, always *consecutive*, resulting constantly either from a gastro-enteritis or an inflammation of the peritoneum; for all the other causes to which the production of hepatic diseases have been ascribed, act primarily, according to him, in producing one or other of these two states. It is impossible not to admire the boldness with which this author applies his universal explanations of *irritation* and *propagation of irritation*, to remove all the obscurities in the history of liver complaints in which others had felt themselves involved; and, more particularly, the self-complacency with which he guards himself against the mistake into which physicians, not *au courant* of the doctrines of the new school, might have fallen, of supposing that he had only reproduced M. Broussais' ideas on the ætiology of hepatitis; assur-

ing his readers, that, while “the one is susceptible of several solid objections, the other adapts itself to all explanations, and is ever in accordance with the facts”!! Though by no means flattering ourselves with the expectation of being able to draw so definite a boundary between the morbid powers which act primarily, and those which act secondarily, on the liver, we shall not leave the distinction altogether out of sight.

SECTION I.

EXTERNAL MORBIFIC POWERS.

INFLUENCE OF CLIMATE.

196. The influence of those physical conditions of the different portions of the earth's surface, which are collectively designated *Climate*, in causing variations in the frequency and fatality of diseases of the biliary organs, has long been well known. But much more precise information than was previously possessed, respecting the extent of these variations, has recently been furnished by the publication of the very valuable Statistical Reports of the Sickness, Mortality, and Invaliding among the British Troops in the different quarters of the globe;—a series of documents that do the highest honour to the Army Medical Department, from the records of which they have been chiefly prepared, and that supply to medical men extensive and accurate data for their reasonings on a number of subjects, respecting which they have hitherto been obliged to form their judgments from very limited and vague observations.

197. The particular element of climate to which most influence has usually been attributed in regulating the prevalence and severity of hepatic diseases, is Atmospheric Heat; and accordingly, as a general rule, it may be admitted, that the frequency and fatality of these diseases in different countries, is in proportion to their annual range of temperature. We shall find reason to believe, however, that there are other conditions besides temperature, belonging to particular climates or regions, by which the prevalence and severity of liver complaints are at least partially determined.

198. The average amount of sickness and of mortality, produced by any given disease, is calculated, in the Statistical Reports, on the annual ratio of admissions into hospital, and of deaths, per 1000 of mean strength. Conformably with this calculation, it appears, that, among the British troops *on home service*, the sickness on

account of diseases of the biliary organs is 8, and the mortality .3. This may serve as a standard of comparison with the same contingencies in other countries.

199. The very great frequency of the occurrence of diseases of the liver in the East Indies, is a fact familiar to every one. The statistical report on the British troops serving in that region, has not yet been published; but, from information with which we have been favoured, it appears, that, on an average of five years, the annual ratio of admissions of British soldiers in her Majesty's service, on the Indian continent, on account of the diseases in question, is in Bombay 62, in Bengal 63, and in Madras 106; and that the ratio of deaths, from the same cause, in these three presidencies respectively, is 3.5, 4.6, and 6. In Ceylon, on an average of 16 years, the ratio of admissions is 53, and that of mortality, 4.3. From materials, embracing 12 years, supplied by Mr. Annesley to the London Statistical Society, the ratio of admissions and deaths from liver diseases, in the Madras Presidency, among British troops, both in the Queen's, and in the H. E. I. Company's service, appears as 116 and 5.62.

200. From a comparison of the different divisions of the Bengal and Madras armies, Mr. Annesley was led to believe that the difference in the frequency of the diseases of the biliary organs, and particularly of acute inflammation of the liver, among the British troops composing these divisions, is dependent, in a great degree, upon the nature of the soil and climate, and the mean annual temperature; hepatitis being most frequent on the Coromandel coast and in the southern provinces of India, where the annual range of temperature is highest. Mr. Annesley further conceives, that, in the same climate, those who are exposed to the direct rays of the sun, especially if this be followed by exposure to the night-dews and malaria, are most subject to hepatic affections. Dr. Mouat, however, in reference to the variations in the frequency and mortality of hepatic diseases found to occur at different stations in the Madras Presidency itself, observes: "Temperature will not explain this anomaly; for Bangalore, a cool station, bears nearly the highest ratio except Hyderabad, which has a still lower temperature during the cold weather."

201. Next to the Presidency of Madras, the stations occupied by British troops, in which liver complaints prevail amongst them most largely and most fatally, appear from the Statistical Reports to be those in Western Africa, the Mauritius, and St. Helena, the ratio of deaths from this cause, annually, being in the first of these colonial commands, 6, and in each of the other two, 4. It deserves to be noticed, however, that, whilst the Mauritius and St. Helena correspond in the ratio of mortality, they differ very widely in the rate of frequency, which is in the former, as in Western Africa, 82, and at St. Helena only 29; implying, so far as the extent of observation warrants an inference, that diseases of the biliary organs are, in the last mentioned island, of extreme severity.

202. That in these stations, also, there are other circumstances besides their mere atmospheric temperature, which assist in determining the frequency and fatality of liver complaints among the British troops, seems highly probable. For though, as is remarked in the Statistical Report, this class of affections occurs more frequently, and of a graver character, at St. Helena than in the West Indies, the temperature is lower and more uniform in the former, and other diseases are more rare. And, in like manner, though the agency of high temperature is in operation in Jamaica, to at least an equal extent as in the Mauritius, the climate of the latter exhibits much the same degree of influence in inducing hepatic diseases as that of Western Africa or St. Helena. It is also deserving of notice, that in the Mauritius, during years remarkable for a very high temperature, this class of affections has not been more frequent than usual.

203. Mr. Boyle, in his Medico-historical account of the western coast of Africa, p. 360, expresses a strong persuasion that a high range of temperature cannot be exclusive, or even the most common cause of hepatitis, since, upon different parts of the coasts of all hot countries, and without any cognizable or important varieties of thermometrical range, the prevalence of the disease will vary in the most unaccountable manner. This, he observes, is found to be peculiarly the case in the British settlements on the western coast of Africa, as in those upon the leeward or southern portion of this coast (from Cape Sierra Leone to Cape Lopez), hepatitis is rather a common complaint; whereas, in those upon the windward or northern portion, on the contrary (from Cape Sierra Leone to the Gambia), it is so uncommon, that the author, while serving at Sierra Leone, never saw one genuine case in the acute form, and unaccompanied by other disease. He has, indeed, seen it succeed to an attack of irregular fever, and become formidable in its course. He has also seen and treated a great many cases of chronic hepatitis whilst at Sierra Leone, but, with few exceptions, they were imported from the leeward coast, and occurred generally in the persons of foreigners brought into the colony in detained slave vessels.

204. It appears from the Army Statistical Report on the West Indies, that in the Windward and Leeward Islands, though diseases of the liver are by no means so common among the British troops as in the tropical regions of the eastern hemisphere, they are nearly thrice as prevalent as among troops in the United Kingdom, and occasion about five times as high a ratio of mortality, the ratio of admissions being 22, and that of deaths 1.8. They vary materially, both in prevalence and severity, at different stations in these islands, occasioning at Grenada, for instance, three times as much mortality as at most of the other islands, and that without any assignable cause. In Jamaica, considering the high degree of temperature in that island, diseases of the liver are by no means very prevalent or fatal, — only half as much so as in the Windward and Leeward

command; the ratio of admissions, on account of these diseases, being 10, and that of deaths 1. Many parts of the island enjoy a remarkable immunity from them.

205. In British America, the prevalence and fatality of this class of diseases appear to be rather under the ratio of Great Britain. In Gibraltar, the Ionian Islands, and Malta, the ratio rises successively above that of Great Britain, as respects both frequency and fatality, being at the last 21 and 1.1, which corresponds very closely with the ratio of the Cape of Good Hope. The ratio of Bermudas, 14 and .5, corresponds nearly with that of Gibraltar.

206. With these results relative to the prevalence and fatality of hepatic diseases among British troops serving in different regions of the globe, it is interesting and important to compare the liabilities, in these respects, of the various other races employed in colonial military service, whether natives of the country in which they serve, or of countries less remote from it than Great Britain, in respect of temperature. In general, it may be stated, that both the sickness and mortality among the native or coloured troops, from this class of diseases, is slight in all the British Colonial stations, with the exception of the Mauritius. In the Madras Presidency, among the native soldiers, is only 9 and .11, instead of 116 and 5.62, as we have seen it to be among the Europeans. They cut off more than a ninth of the Europeans, and less than one per cent. of the natives. It is singular, however, that the natives seem to be less able to resist these diseases, when attacked by them, than the Europeans, since of those attacked, 12 per cent., or 1 in 8, died among the former, and only five per cent., or 1 in 20, among the latter. The mortality in the West Indies, also, from diseases of the liver, is much less among the black than among the white troops. Among the white troops, the ratio of deaths annually from diseases of the liver, ranges from 1, as in British Guiana, St. Lucia and Jamaica, to 4.5, as in Grenada, the average being about 1.8. Among the black troops, the same ratio ranges from .3, as in British Guiana, and .4, as in Jamaica, to 1.6, as in Dominica, and 1.7, as in Antigua and Montserrat, the average being .9. Respecting the Mauritius, it is remarked in the Army Statistical Report, that, though the black pioneers employed there are accustomed from infancy to a high temperature and constant exposure, they suffer more from hepatic disease than the white troops, natives of a northern climate, the mortality being relatively as 5.7 to 4. The admissions are certainly not so numerous among the former, but, as generally happens among colonial corps, many of the milder cases undergo native treatment without the patient coming into hospital. As the negro does not suffer to any extent from diseases of the liver, either on his native coast or in the West Indies, notwithstanding the high temperature, his liability to them in the Mauritius, so far as this can be considered as established by the present extent of observation, must be supposed to arise

from some peculiar tendency in the climate to induce them, for which no satisfactory theory has as yet been advanced.

207. Alpinus, in his work *De Medicina Ægyptiacorum* makes no particular mention of liver diseases as prevailing in Egypt. Baron Larrey's account of his campaigns, however, abundantly proves how frequent a disease hepatitis is, at all events among Europeans, in that country, and how liable to run on to suppuration. (ii. 35.) From Sir James M'Grigor's statement of the deaths and diseases of the Indian army in Egypt, from the time of embarkation to the return to India, in 1801-2, it appears that, of 309 deaths among Europeans, 64, or more than 1 in 5, proceeded from liver complaints, and that, of 391 deaths among natives of India, only 12, or about 1 in 32, arose from the same class of diseases. (Medical Sketches, Table II.)

208. Though cases of diseased liver are much more numerous in hot than in temperate regions, they seem to be less varied in their nature. Sir George Ballingall has remarked with regard to India, that "the diseased appearances of the liver are generally confined to suppuration or induration, the legitimate results of inflammation; whilst the different species of *tubera*, described by Dr. Farre, are by no means a common occurrence in that climate, and the existence of hydatids in the liver is very rare." (See, to the same effect, Dr. Conwell's Treatise on the Liver, § 135.) The same observation we have heard made by several practitioners of long and extensive experience in India.

209. Dr. Powell, in observing that it is probable that climate, and its attendant circumstances, have a considerable influence on the production of biliary concretions, states, that, so far as he has been able to ascertain, this must be a very rare disease in hot countries; "the bile there," he adds, "has a tendency to run into a different state of alteration." We are informed by Mr. Annesley, that he has seldom observed biliary calculi lodged in the *hepatic ducts*, in India. It is very probable, he observes, that when they form in this situation, they become a source of irritation, and, acting as a foreign substance, produce inflammatory action, which soon terminates in abscess, — a suggestion confirmed by the experience of Dr. Daun, as will afterwards be more particularly noticed. But Mr. Annesley alleges, that biliary calculi frequently form, in warm climates, in the *gall-bladder*, and often produce inflammatory action in this receptacle, or in the cystic or common duct, not unfrequently attended with spasm, which often extends to adjoining organs. Finally, Mr. Twining, in his enumeration of the morbid appearances of the biliary organs observed by him in dissections in Bengal, mentions "concretions, in colour and consistence like yellow soap, extending along the biliary canals, through a considerable space." The left lobe, he alleges, has been observed more frequently affected in this way than the right; it is, however, he adds, a rare disease in Bengal. He also mentions biliary concretions in the *gall-bladder*, but says nothing of their frequency.

EPIDEMIC PREVALENCE.

210. Depending, in a considerable degree at least, for their production, on circumstances of season, some of the diseases of the liver occasionally assume an epidemic character. The late Dr. Colin Chisholm published, in the *Medical Commentaries* for 1786, "The History of a singular affection of the Liver, which prevailed epidemically in some parts of the West Indies," in that and the previous year; at which time he was surgeon at St. George's, Grenada, the West India island in which, as we have seen (204), diseases of the liver are, at the present day, most prevalent. In his *Manual of the Climate and Diseases of Tropical Countries* (p. 65), Dr. Chisholm reverts to this disease under the name of Anomalous Hepatitis, and seems to believe that its propagation depended, in some degree, on infection. Dr. Chisholm states also, in his *Manual*, that this very anomalous and dangerous disease occurred several times subsequently, during his residence in the West Indies, sometimes epidemically and sometimes sporadically; and that it is not unfrequent in the larger islands, in situations and seasons similar to those in which it occurred in Grenada.

211. A considerable number of instances have been recorded of the epidemical occurrence of Jaundice. Thus, Dr. Cleghorn, in his *Observations on the Epidemical Diseases of Minorca*, mentions a slight Jaundice, without fever, which soon yielded to purgatives and saponaceous medicines, as having been "a common distemper" in that island in July and August, 1745. Dr. Wm. Batt has described a jaundice which was epidemic in Genoa and its vicinity in 1792-3. He saw, in all, forty-three cases, the first in the end of September, 1792, and the last towards the end of August, 1793, but the greatest number previously to the vernal equinox of the latter year. The disease, although sometimes troublesome, was rarely dangerous. In the city of Genoa, only two died, and one of these not of the disease but of the remedy; for, having taken some ipecacuan as an emetic, it produced, by the efforts of vomiting, a fatal hemorrhagy. (*Edin. Med. Surg. Journ.*, i. 107.) On what internal morbid condition can epidemic jaundice be supposed to depend?

INFLUENCE OF DIET AND EXERCISE.

212. The quantity and qualities of the food that is used by different individuals, are by no means unimportant as regards the action and condition of their liver. An over proportion of animal food seems to favour an excessive secretion of bile, partly, perhaps, by causing, in consequence of its stimulant qualities, an increased determination of blood to the chylopoietic and assistant chylopoietic

viscera ; and partly, also, probably, by modifying the qualities of the blood. And whatever may be the direct effects of variety and high seasoning of dishes, upon the liver, or their agency through the mucous membrane of the alimentary canal, there can be no doubt that, as temptations to excess in the use of animal food, they exert a very prejudicial influence upon this organ. In the experiments performed by M. Magendie on the feeding of animals upon substances that do not contain azote, both the bile and urine appeared to M. Chevreul, who examined them, to possess almost all the characters of these secretions as met with in herbivorous animals. The bile, it is particularly remarked, contained a considerable portion of picromel, the peculiar character, as M. Chevreul conceived, of the bile of the ox and of herbivorous animals in general. (Mem. lu à l'Acad. d. Sciences, 19 Aout, 1816.)

213. It seems not out of place to allude here to the well known enlargement which, under a particular mode of feeding, the liver of the goose undergoes, in a very short space of time, and which furnishes gourmands with one of their most relished dishes. Those who are engaged in providing this article of luxury, make choice, we are told, of a healthy goose, and inclose it in a kind of cubical cage, where it is, as it were, closely packed up, without room to move. It is placed in a dark situation, and crammed (*gavé*) three times a-day with a paste made of flour of maize, a little salt, and sometimes a little oil : it is supplied with water containing charcoal and red river sand. The cold season is the most favourable for the success of this operation, for which a month is sufficient ; if continued longer, the goose would lose the fat which it has acquired. It is known by the whiteness of the beak, and the difficulty of breathing, that the animal has arrived at the desired point of stuffing (*sagination*), and that it must be killed to prevent its dying of suffocation. The weight of the liver increases to two or three pounds, and it is esteemed by gastronomic scavans in proportion to its weight in size. (*Dict. des Sci. Med. Art. Oie.*)

214. What the respective influence of the food and of the confinement may be in this barbarous operation, we cannot pretend to tell ; but that persons leading a life of bodily inactivity, particularly men engaged in literary pursuits, and women occupied in sedentary employments, are peculiarly liable to hepatic diseases, seems to be very generally admitted by those who have paid attention to the history of this class of affections. By some, the flexure of the body forwards, to which such persons so very generally yield, has been supposed to be one of the circumstances which operate injuriously on the biliary organs. But the more generally received explanation turns on the belief that the excretion of the bile depends little on any inherent action of the gall-ducts, and to a very great extent on the agitation which the hepatic system suffers during bodily exercise ; and that, consequently, the want of such exercise must lay a foundation for morbid derangements of the biliary organs. It is supposed probable, too, that the venous

circulation of the liver is promoted by the muscular motions produced in bodily exercise, and that, these failing, this circulation will be proportionally languid. As illustrating the influence of bodily inactivity on the production of *biliary calculi*, it is mentioned by Dr. Powell, that "they are comparatively much more frequent in women than in men, and, of either sex, especially in those who have passed the middle and active period of life. Haller noticed the frequency of their occurrence in criminals whose death had been preceded by long confinement; and Bianchi, in persons who had been subject to frequent attacks of gout. They are often found in the gall-bladders of oxen which have been stalled during the winter months, and I have reason to believe that they occur in a larger than common proportion of maniacs who have been confined." (P. 133, 134.) The statement of Gurlt, that, of 800 horses, in none were gall-stones found, seems to strengthen this view of the dependence of the formation of these concretions on bodily inactivity. (See Müller's *Archiv.*, 1834, p. 194.)

EXTERNAL INJURY.

215. External injury inflicted upon the region of the liver independently of its producing the immediate mechanical effects of contusion, rupture, and wound, may give rise to different forms of diseased action in that organ. Its most frequent consequence, unquestionably, is inflammation; and traumatic hepatitis may pass through all the same stages as hepatitis depending on internal causes. Dr. Nicoll, in the report formerly quoted, mentions that he has known many decided instances of acute hepatitis being induced by outward violence, and particularly refers to three fatal cases of this kind, in each of which the greater part of the right lobe of the liver was found converted into pus. But a blow on the region of the liver is sometimes followed, at a longer or shorter interval, by the development of a simple serous or of an hydatid cyst, or, perhaps, of some other form of non-inflammatory structural alteration, conformably with the diversity of effect well known to be produced by external injury on the mamma or testicle.

ALCOHOLIC LIQUORS.

216. This influence of alcoholic liquors in inducing diseases of the liver, has been much insisted on, both as respects tropical and temperate climates, with this difference, that, in the former, it is inflammation of a more or less acute character which is found to be produced by excess in these agents, while in temperate climates, diseases of the liver arising from this cause, when they prove fatal, generally exhibit the granular character. The belief that wine and spirituous liquors operate specifically in the production of liver-com-

plaints, was opposed by Dr. Thomas Mills of Dublin, who affirms that persons who indulge freely in the use of such liquors, are not the most subject to these ailments, — that they occur in those who are temperate, and are found even in children and infants. In the statistical report on the sickness, &c., among the troops in British America, it is mentioned that the prevalence of diseases of the liver in Nova Scotia and New Brunswick, is little higher than among the Dragoon Guards and Dragoons serving in the United Kingdom, and the mortality is only half as high, — a fact, it is observed, “which tends to throw very considerable doubt on the supposed influence of spirituous liquors, in inducing affections of the liver, at least in a cold climate; for, owing to the low price of these in Nova Scotia and New Brunswick, there are few stations where intemperance is carried to a greater extent; yet not only do the troops suffer less from diseases of the liver than at home, but the proportion of deaths is only two-thirds as high as among persons insured in the Equitable office, who, from their rank in life, as well as the caution exercised in their selection, are by no means likely to be addicted to that vice.” It may be observed, too, that Sir George Ballingall, while he conceives that in India, affections of the liver are obviously, in a great majority of instances, the joint effects of climate and intemperance, acknowledges that in others we find them the result of climate alone. When originating solely in this latter cause, he adds, their symptoms are often very obscurely marked.

MERCURY.

217. It is a well-established fact, that *mercury* administered as a remedy in different forms of disease, occasionally proves the cause of hepatic affection, which presents itself sometimes under the distinct characters of hepatitis, and sometimes under the more obscure garb of jaundice. The first notice of the influence of mercury in inducing disease of the liver, with which we have met, is contained in a letter by Dr. Sherwen, dated from the River Ganges in September, 1770, which is published in the 6th and 7th volumes of the Annals of Medicine. Dr. S.’s experience of this operation of mercury was confined to a single case. Dr. Dick, who practised long in Calcutta, in a letter to Dr. Saunders, of which extracts are published in that author’s work upon the liver (p. 257), alludes to his having very often observed chronic liver-attacks succeed to long courses of mercury, undergone for the cure of venereal complaints. The late Dr. Cheyne makes the following observations on this subject. (Dublin Hospital Reports, i. 278.) “It does not appear to be generally known, that mercurials actually produce the jaundice; yet this is a fact of which, in the course of the last two years, I have seen three striking examples.” “In large establishments for the cure of venereal

complaints, jaundice not unfrequently appears during courses of mercury; and if the mercurial is not laid aside, and purgatives given, and the antiphlogistic regimen adopted, a new and alarming series of symptoms is apt to arise; the brain becomes affected; the patient becomes at first frantic, and then he falls into a state of coma. Three cases of this kind have been related to me by competent observers." The following statement by Dr. Nicoll, relating to the same point, is well deserving of the attention of practitioners. "I have occasionally seen hepatitis come on a few days, but oftener weeks, after a mercurial course for a venereal complaint. Although the venereal disease has not been very common in the 80th regiment for some years past, yet a great proportion of those who have had it, and have undergone courses of mercury for its cure, have suffered from hepatitis; and many of our fatal cases were of that number. I have known three striking instances of hepatitis occurring in young men, who had been from two to three weeks under the influence of mercury (Pil. Hydrarg.), for chancres. In the first, the disease terminated fatally; and, in the other two, by bleeding, purging, and increasing the quantity of mercury, they both recovered. Amongst our chronic cases of ophthalmia which occurred at Quilon in 1815, eight men were seized with hepatitis, after having been from four to nine months in hospital. These men all recovered under the usual treatment. On the first appearance of the ophthalmia, they had been all purged and bled freely; and when the disease became of a chronic nature, were put under an alterative course of mercury." "That the inordinate use of mercury," says Dr. Chapman of Philadelphia (Amer. Journ. of Med. Sci. i. 476), "may in various ways derange the primæ viæ and liver, so as to produce the icterose affections, seems to me highly probable. Many years ago, I saw an inveterate case of jaundice developed during a protracted salivation for syphilis, and within the last few months I was consulted in a second case of it under the same circumstances. In neither of these instances, was there reason to suspect any previous disorder of the chylopoietic viscera." After referring to Dr. Cheyne's experience on this matter, Dr. Chapman proceeds; "It is somewhat remarkable, that this fact should not have been earlier applied by me; since, for several years, I have taught in my lectures that the extravagant employment of mercury by many of our practitioners, in autumnal fever and other diseases, must be assigned as one of the causes for the general prevalence of chronic hepatic affections in some portions of our country." "In further support of this hypothesis, I have learned from the venerable Dr. Somerville, of the south of Virginia, who has practised medicine in that section of the country for nearly half a century, that, till the enormous introduction of mercury in the treatment of autumnal diseases, hepatitis was hardly known, but that since then it most widely prevails. Not a few confirmatory statements have I received from my correspondents in other parts of the United States, so

that the fact seems pretty well established." (See also Dr. Conwell, § 108.)

218. In what way may we suppose the two morbid agents last mentioned, alcohol and mercury, to act in inducing liver-disease? Do they, through the circulation, reach the organ itself? Do they affect it through the nervous system? or do they primarily produce disease in some other organ, which extends, or is transferred, to the biliary organs?

219. In considering these questions, there are two facts which it is proper to keep in mind, viz., 1st, The occasional occurrence of abscesses in the liver, in cases of injury of the head, — a fact which has long been noticed, and which was at one time supposed to indicate the existence of a peculiar sympathy, or of some physical mode of communication, between the head and the liver. To this doctrine we shall have occasion afterwards to advert. But, in the second place, besides secondary abscesses, or purulent deposits, the liver is, as we have seen (123), very liable also to become the seat of secondary malignant growths, in whatever part of the body the primary disease may have developed itself.

220. These facts would seem to imply that foreign matters, circulating along with the blood, are peculiarly liable to be detained in this depuratory viscus; and they suggest the inquiry whether anything analogous can be supposed to happen in respect of alcohol and mercury, when these substances exert a noxious influence upon the liver. MM. Autenrieth and Zeller state, as the results of some experiments which they made on the effects of mercurial frictions upon animals, that mercury was found in the bile of animals which had been killed by the use of this metal, and in a quantity proportionally much greater than even in the blood of these same animals. They noticed, also, an alteration in the colour of the bile in dogs thus treated, inasmuch as it was green in place of being yellow, as it usually is. This change in the physical properties of the bile they are disposed to attribute rather to the presence of the metal in it, than to an alteration of the secretion. (Reil's Arch. viii. 252.) In some ingenious experiments performed by M. Cruveilhier, it was found, that when mercury was introduced into the *abdominal* venous circulation, it was for the most part arrested and deposited in the liver, giving rise in that organ to inflammatory action; and that, on the other hand, when introduced into the *general* venous circulation, it was usually arrested in the lungs. These results, however, M. Cruveilhier acknowledges not to have been uniform; the mercury in these experiments, like the pus absorbed from abscesses, being sometimes deposited in other organs or parts of the body than the liver and lungs; in consequence, as he conceives, of the foreign substance having escaped in part, or whole, through its first barrier, and finally been stopped in some other situation. Dr. Percy, in his recent "Experimental Inquiry concerning the presence of alcohol in the ventricles of the brain, after poisoning by that liquid," states as his third conclusion, that "alcohol may be

detected in the blood, the urine, the bile, and the liver. It may be separated with great facility from the bile and liver; and this circumstance," he conceives, "may probably serve to explain the frequency of hepatic disease in habitual drunkards." M. Andral, it may be remarked, had previously suggested that the alcoholic particles introduced into the alimentary canal, being carried directly to the liver by the mesaraic veins, may act as a direct irritant upon that organ.

221. Whatever may be thought of the validity of M. Cruveilhier's views of the liver and lungs as *barriers* to the circulation, or of the applicability of these views to the explanation of the production of liver-disease by substances introduced into the alimentary canal, it seems probable that, in many cases alcoholic liquors exert their first morbid effect on the mucous membrane of that canal; and that the morbid affection of this membrane, to whatever it may amount, extends, by continuity of texture, to the mucous membrane of the gall-ducts, and from thence to the parenchyma of the liver. "In the dissection of those who have been intemperate dram-drinkers," says Dr. Saunders, "the diseased structure may be traced from the stomach along the course of the ductus communis, and I have frequently seen these ducts so contracted and thickened (in such persons), that they could not transmit bile;" and Mr. Twining, in mentioning obliteration of the biliary ducts as being only observed when the liver had undergone certain forms of enlargement, adds, "the patients for the most part are drunkards."

MENTAL EMOTIONS.

222. The influence of mental emotions in inducing, sometimes by a sudden, and sometimes by a slow operation, derangements of the biliary organs, is illustrated in the not unfrequent induction of jaundice by a fit of passion, and in the sallowness and other symptoms indicative of biliary disturbance that frequently attend hypochondriasis. Mr. Annesley observes, "that though the depressing passions of the mind, generally remarked in hepatic inflammations, are, in such cases, merely symptoms of the disease, they are also amongst the most frequent causes of all kinds of biliary disorders, and are not the less to be looked upon as causes, for being also generally present as effects of those diseases" (p. 440): and Dr. Wilson Philip alleges, that whilst the passions, particularly the depressing, often instantly derange the functions of the liver, they seldom fail, if long continued, to affect its structure. (On Acute and Chronic Diseases, p. 180.)

223. We have already (6, 17, 30,) alluded to the unsatisfactory character of the explanations that have been given of the immediate mechanism by which the symptoms indicative of bilious derangement, arising from particular states of mind, are produced; and, in

particular, have pointed out the doubts which, we conceive, may reasonably be entertained, as to whether it is the secretion or excretion of the bile that is disturbed.*

SECTION II.

RECIPROCAL INFLUENCE OF DISEASES OF THE BILIARY ORGANS IN PRODUCING ONE ANOTHER.

224. The reciprocal influence of the different diseases of the biliary organs, dynamical and structural, in producing, and in maintaining one another, is highly deserving of attention, seeing that, in consequence of this tendency, the symptoms of these affections are usually found variously complicated with one another, in individual cases. Thus, any morbid condition, whether seated in the substance of the liver, or in the gall-ducts, which tends to impede the flow of the bile from a particular portion of the biliary passages, will, amongst various other effects, favour the formation of gall-stones; and, in its turn, the existence of gall-stones in any part of the biliary passage has a great tendency to produce inflammation, not only of these passages themselves, but likewise of the substance of the liver. And when inflammation of these parts has been produced by any cause, the existence of gall-stones in the biliary passages may have a powerful influence in preventing its termination in resolution. Accordingly, Dr. Daun, in his report on hepatitis as occurring at Quilon, expresses his suspicion that its deep-seated character was attributable to concretions obstructing the passage of bile in the ducts. Other illustrations of this reciprocal influence have been noticed in the course of the first chapter.

* Dr. Beaumont, in his account of his experiments on St. Martin, mentions, that, on one occasion when St. Martin had experienced a fit of violent anger, he found the contents of the stomach considerably tinged with yellow bile, a circumstance which he had but once before observed in his experiments upon him. "This circumstance of bile flowing into the stomach during a fit of anger is," says one of Dr. Beaumont's reviewers, "if correct and well ascertained, a very curious one;" and he alleges that the application by the ancients of the term choleric to a bilious man, was always (up to the time of this experiment, we presume) "ranked among those fancies which originated in some play of the imagination." We had supposed the reflux of bile into the stomach, during a fit of passion, to be a matter of common experience; and, indeed, we cannot but regard the reviewer's being unaware of the fact, as a proof how little he himself is troubled with those unpleasant sensations which, in the exercise of his vocation, we fear, he must not unfrequently excite in others.

SECTION III.

INFLUENCE OF DISEASES OF OTHER ORGANS IN PRODUCING
'THOSE OF THE LIVER AND BILIARY PASSAGES.

225. There are certain diseases occurring in other systems or organs of the body, to which affections of the biliary organs, dynamical or structural, are very liable to succeed, and which, consequently, may be regarded as standing to these affections in the relation of exciting causes.

226. (a) That the liver is liable to undergo morbid changes during the progress of *fevers*, seems to be established by the experience of most countries, and, particularly, of those in which fever usually assumes a remittent or intermittent type. M. Louis has found that, in nearly a half of the cases of the typhoid fever of Paris, which prove fatal, the liver is in a state of softening, the most severe and the most evident, says he, of almost all its lesions; and, in some cases, so great is the degree of softening that the organ is very easily torn, the fingers being plunged into it without, as it were, experiencing any resistance. As we may suppose the same change to have occurred in cases which recovered, it is a matter for investigation whether, on the return of health, a liver in this state regains its ordinary condition, and, if so, what length of time is required for this.

227. Dr. Davis, in his account of the morbid appearances found in the bodies of those who died subsequently to their return to England from the Walcheren expedition of 1809, states, that "the liver was generally loaded with blood, and the portal system obstructed. In some instances, the liver was of a gelatinous consistence. Portions of it, taken between the fingers, could be squeezed to a substance similar in appearance to grumous blood." P. 185. We have already referred (66) to similar observations made in Italy and in India, respecting the state of the liver in fevers of an intermittent or remittent type. But the affection of the liver accompanying these fevers in hot climates is often of a decidedly inflammatory character. "Acute hepatitis," says Dr. Nicoll, "is frequently found complicated with intermittent and remittent fevers, as well as with dysentery and diarrhœa; but whether the hepatic affection is a cause or a consequence of these diseases, is a point which has not been satisfactorily determined. We are ignorant of the connection which subsists between them; we are only acquainted with the fact that hepatitis sometimes precedes, but more generally follows, attacks of tropical fevers, dysentery, and diarrhœa."

228. (b.) That diseases of the biliary organs, dynamical perhaps in their commencement, and becoming structural in their progress,

may take their origin from affections of the *alimentary canal*, and particularly of the stomach and duodenum with which they are most immediately connected, seems, from both anatomical and physiological considerations, to be very probable. According to M. Broussais, whenever the mucous membrane of the stomach and duodenum is inflamed, whether primarily or as a consequence of encephalic inflammation, the liver becomes engorged; and this engorgement, which leads to excessive biliary secretion, sometimes gives rise to inflammation. It is, he alleges, this extension of inflammation, whether of an acute or of a chronic character, from the intestinal canal to the liver, which, in consequence of inattention to the primary symptoms, is generally regarded and treated by medical men as primary hepatitis. (*Hist. des Phlegm. Chron.* 3d edit. iii. 266–275.) M. Andral is disposed to concur in the opinion of M. Broussais, that, in most cases of inflammation of the liver, there has been previously duodenitis. The observation of symptoms seems to him to favour this conclusion; and, in some cases, the examination of the dead bodies of jaundiced persons has brought to light no other alteration but a high degree of inflammation of the duodenum, which appeared to have extended itself to the biliary ducts.

229. M. Louis, on the contrary, whilst not denying that inflammation of the mucous membrane of the duodenum may co-exist at the same time with inflammation of the liver, infers, from the cases of hepatic abscess which have fallen under his examination, that such a co-existence is far from being constant. In four cases of this kind, in which the mucous membrane was carefully examined, it was found perfectly healthy, with the exception of a slight degree of softening, unattended with redness, which was noticed in one of the cases. (*Rech. Anat. Path.* p. 404.)

230. Without denying that inflammation frequently follows the course alleged by M. Broussais, it may reasonably be questioned whether his doctrine is not pushed to an excessive length in the pathological propositions, that “hepatitis is consecutive to gastro-enteritis, *when* it does not depend on external violence;” and that “chronic gastro-enteritis is *the cause* of hepatic engorgements, and of yellow and fatty livers, even among the phthisical.” (*Comment. des Propositions de Pathologie*, Prop. 149.)

231. We have already referred (221) to the general belief, that the primary morbid action of spirituous liquors is on the alimentary canal, and that marks of disease, more or less apparent, can be traced, extending from this canal to the substance of the liver, when disease of this organ occurs in persons addicted to intoxication. It was suggested by M. Ribes, and the opinion seems to be adopted by M. Andral, that inflammation commencing in the intestinal canal may propagate itself to the liver, not merely along the mucous membrane, but also along the veins, the inflammation spreading from the small mesaraic branches to the trunk of the

vena portarum, and thence extending itself to the parenchyma of the liver.

232. It seems not impossible that inflammation of the duodenum, without extending farther into the biliary system than the intestinal orifice of the choledoch duct, may produce such a stoppage of the biliary excretion as to give rise to jaundice in the first place, and eventually to organic disease of the liver. But Dr. Stokes conceives, that the dependence of jaundice on gastro-duodenitis, which he regards as the morbid condition that most commonly induces it, is to be explained on different principles. "In this case," says he, "an inflammatory affection of the stomach and duodenum acts *sympathetically* on the liver; and we have jaundice occurring independent of hepatic inflammation, or mechanical obstruction to the flow of bile. It is said," he further remarks, "that the inflammation extends from the duodenum along the common biliary ducts to the liver. I am not possessed of facts to confirm this assertion; but I have little doubt that, in the majority of cases, the jaundice is more the result of a mere lesion of innervation of the liver, than proceeding from any spread of inflammation along the duct into its substance." (Lond. Med. Surg. Journ. 1834.)

233. Sir Henry Marsh has adduced (Dubl. Hosp. Rep. iii. 270) several cases, to prove that a long continued obstruction of the large intestines, from an accumulation of hardened fæces or scybala, becomes occasionally the immediate cause of jaundice; but the only approach we can find to an attempt, upon his part, to explain the relation subsisting between these two phenomena, — the intestinal obstruction and the jaundice, — is his observation, that the cause which prevents the free descent of the bile, and produces jaundice, resides sometimes in the large intestines. Whether he supposes the stoppage of the bile, and its reabsorption into the circulating system, to take place within the alimentary canal, or previously to its excretion from the biliary passages, does not appear. Nor is any judgment on this point offered by Dr. Stokes in recognising the jaundice which depends on the accumulation of scybalous matter in the bowels as one of the forms arising from mechanical obstructions. Dr. Coe, however, had previously mentioned, as causes on which jaundice may depend, "the duodenum being loaded with such contents as stop the orifice of the duct, or the colon being stuffed with hard fæces, pressing upon the duodenum and ducts." (P. 267.) In the same manner, jaundice may be produced by enlargements of some of the other viscera adjacent to the liver, as of the pancreas.

234. We have already alluded to dysentery, as one of the diseases with which hepatitis is very liable to be complicated, particularly in tropical climates. Much doubt has existed among pathologists as to the relations of these two diseases to one another, — as to which is the primary, and which the secondary affection, or whether they be not parts of the same disease. Dr. Nicoll, in

avowing his inability to determine this point, mentions, that "it was by no means an uncommon occurrence, at Quilon, for hepatitis to succeed to the termination of dysentery. I have sometimes noticed its attack almost immediately on the ceasing of the dysenteric symptoms; while, at other times, weeks, nay months, elapsed, before hepatic symptoms supervened."

235 (c) We formerly had occasion (59) to notice the influence of diseases of the *heart*, and particularly of such as impede the emptying of the inferior vena cava into the right auricle, in producing sanguineous congestion of the liver; a subject which is specially considered by Corvisart, in his *Essay on the diseases of that organ*, in an article "on the means of distinguishing sanguineous engorgement of the liver, consecutive to diseases of the heart, from other hepatic affections."

236. (d) It is easy to conceive that diseases of the *lungs* occasioning an impediment to the circulation of the blood, may, in like manner as diseases of the heart, act back upon the liver, so as to produce mechanical congestion of this organ. Mr. Paisley, formerly head surgeon in Madras (in a letter which, though addressed to an individual in reference to a particular case, seems to have been for many years very extensively circulated among the medical practitioners in India, and to have been in high estimation among them as a code of medical practice in the diseases of that climate), particularly notices the frequent connection of diseases of the liver and of the lungs. In pointing out the liability of the lungs to become secondarily affected in diseases of the liver, Mr. Paisley affirms that, reciprocally, in all disorders of the lungs of any standing, the liver is always affected. The nature of the affection, however, he does not explain. Dr. Powell, in referring to this remark of Mr. Paisley's, states, that, in examining phthisical patients, or such as have, from any causes, had the lungs rendered less pervious to the circulating blood, he has very frequently found the liver enlarged in its size and looser in its texture,—in some, very considerably so, and appearing little more than a connected mass of blood, readily giving way and breaking down on the application of slight pressure; and that in other cases, injections, pushed into the vena portæ, have seemed to distend the liver more readily and completely than where no disease of the lung subsisted. It is easy, also, to conceive that inflammation of the lungs may extend to the liver.—"In many instances," says Mr. Parker, in his *Treatise on the Stomach in its Morbid States*, "inflammation commencing in the lungs or their investing membrane, is thence propagated to the liver. I have seen two instances of pneumonia terminating in abscess, which have commenced in the inferior lobe of the right lung, and have ultimately involved the liver in the disease. Andral has recorded another instance of this mode of extension from the lung to the liver. (Obs. 23.) Regnault has also noted several instances of pleurisy producing hepatitis." (P. 141.)

237. Fatty degeneration of the liver is a very frequent attendant on pulmonary consumption; but of the nature of their connection, it seems impossible to suggest any explanation. M. Laennec remarks, that the fatty infiltration of the liver is met with in other chronic diseases besides phthisis, and that, likewise, he has found it alone, and without any serious concomitant organic disease. "M. Broussais, he adds, appears to think, that this state of the liver is a sympathetic effect of inflammation of the duodenum. I have seen few evident instances of inflammation of that intestine, and I believe that it is very rare in the eyes of all anatomists, who do not confound cadaveric congestion with inflammation. I have often found the duodenum very red when the liver was healthy, and the liver fatty when the duodenum was very pale." M. Louis mentions, that, of 49 cases of fatty liver which he had met with in the course of three years, in 47 it occurred in phthisical persons, so that to a certain point, he observes, it may be considered as a consequence of that affection. He met with it in a third of the bodies of phthisical patients which he examined, and more frequently in women than in men in the proportion of four to one. He concurs with Laennec in refusing to recognise diseases of the duodenum as one of the causes which favour the development of the fatty state of the liver, seeing that duodenal affections were rarely met with in his dissections, and quite as unfrequently among those with fatty, as among those with healthy livers. The late Dr. John Home mentions, in his Statistical and Pathological Report of the Royal Infirmary of Edinburgh (*Edin. Med. Surg. Journ.* xlix. 1), that, of 65 cases of pulmonary phthisis in which the liver was examined, in 10 it was in a fatty, and in 5 others in a waxy state. All these cases of fatty and waxy liver, except one, occurred in women; so that, though the total proportion of phthisical cases in which the liver had undergone this kind of degeneration, was less than M. Louis had found it to be in his dissections, the relative proportion of the sexes established, still more decidedly, its greater frequency of occurrence among women than men. In 23 of Dr. Home's 65 cases, the liver is said to have exhibited different forms of the early stages of cirrhosis, an affection which is not mentioned either by Louis or Andral as having been noticed in their cases of phthisis. "In many cases," says Dr. Home, "this state of the liver was no doubt owing to obstructed circulation through, and diminished function of, the lungs; but I would ascribe its origin in most of the cases to the abuse of spirituous liquors, to which many of the individuals in whom it was found were addicted; hence we may account for its more frequent occurrence among men than among women."

238. (e.) The attention of pathologists was particularly called to the frequent coexistence of diseases of the liver and of the brain, by the late Dr. Cheyne, who pointed out acute hydrocephalus, phrenitis, apoplexy, lethargy, tetanus, catalepsy, chorea, epilepsy, and, on the authority of the late Mr. Todd of Dublin, idiotism and

mental derangement, as the cerebral affections in which there is frequent coincidence of hepatic dynamical derangement or structural alteration. On the question of priority and succession in these two classes of diseases, Dr. Cheyne remarks, — “That the brain should be suddenly affected in consequence of its connexion with the liver, is not more remarkable than that the liver should be suddenly disordered from affections of the brain. Yet this last is an established observation. I am informed by a gentleman who has occasion to dissect a great many bodies, that, in diseases of the brain, he never fails to find the liver diseased either as a cause or a consequence. The same gentleman assures me, that the liver generally discovers the marks of recent inflammation after fatal injuries of the head. Every surgeon knows that abscess of the liver is a common effect of injury of the brain.”

239. Dr. Pritchard has devoted a chapter of his Treatise on Diseases of the Nervous System to the consideration of epileptic and maniacal cases connected with disease in the liver and other abdominal viscera. In referring to Mr. Todd's statement as quoted by Dr. Cheyne, respecting the frequency of liver-disease in cases of idiotism and mental derangement, Dr. Pritchard acknowledges, that, within the sphere of his own observation and inquiry, the instances have not been very numerous in which organic disease of the liver, or other large viscera, has been discovered in conjunction with maniacal disorders. But, of the conjunction of such diseases with epilepsy, he states that he had seen a sufficient number of observations to conclude that there must be some sympathy or connexion, depending on circumstances unexplained by any principles in pathology, between that morbid state of the brain which gives rise to epilepsy, and a diseased state of the liver and other large viscera of the abdomen.*

240. (f.) The liability of the liver to become the seat of abscesses, subsequently to the reception of *injuries on remote parts* of the body, was first noticed in regard to injuries of the head. Paré mentions examples of this occurrence, and endeavours to account for it. Subsequently to his time a number of additional cases of abscess of the liver succeeding to injury of the head were recorded, and various explanations were proposed as to the nature of the relation between the head and the liver on which this succession might be supposed to depend. Of these explanations some implied that the matter which forms the abscess was originally produced within the head, and conveyed or transferred in some way or other from the head to the liver; and others implied that it was originally produced in the liver itself. In the progress of time it came to be ascertained, *first*, that the liver is not the only organ of the body in which abscesses occur subsequently to injuries of the head; and,

* It may be mentioned here, that Mr. Andree, in stating that the bile of animals has been found a successful medicine for epilepsy, accompanied with a bloated and pale countenance, adds, “which I think not improbably to have been cases of diseased liver.”

second, that injuries of the head are not the only forms of lesion in which abscesses of the liver and of other remote organs are liable to be produced. Hence it has become necessary, in attempting to explain the phenomenon in question, to seek for some principle of more general application, than a peculiar relation subsisting between any two organs or portions of the body, such as the liver and the head. The recent progress of pathological investigation seems to render it very probable that, in such cases, the veins serve as the medium of communication between the seat of the primary lesion and that of the consecutive abscess; and that inflammation of the lining membrane of these vessels in the part injured, the consequent formation of pus, and its introduction into the circulation, are some of the links which connect the two events. But pathologists are not agreed in opinion as to whether the pus thus formed in the seat of the primary lesion may not, in some instances at least, be simply deposited in the seat of the consecutive abscess; or whether it gives rise, in all cases, to a new inflammation in the part to which it is conveyed, in the course of which the consecutive abscess is formed.

CHAPTER III.

OF THE SYMPTOMS AND DIAGNOSIS OF DISEASES OF THE BILIARY ORGANS—THEIR COMPLICATIONS AND TERMINATIONS.

241. The next point of view in which we have to consider the diseases of the biliary organs, respects the possibility of recognising them, as they occur in nature, by the combinations or successions of morbid phenomena, or symptoms, which attend them,—of establishing, in short, their diagnosis upon obvious and constant characters.

242. The principal sources of difficulty and fallacy to which the medical practitioner is exposed in diagnosis, may, as we have elsewhere endeavoured to show (*Encyclopædia Britannica*, Art. *Physic*, Practice of), be referred to four separate heads, *viz.*, 1st, the occasional absence of any obvious or characteristic symptom, in cases in which there exists decided structural alteration of some of the textures, systems, or organs of the body; 2^d, the occasional identity, or at least close resemblance, of the groups or trains of symptoms arising from different pathological conditions; 3^d, the occasional diversity of the group or train of symptoms produced in different individuals, by a lesion apparently identical; and, 4th, the simultaneous occurrence of morbid conditions in different parts of the same economy, sometimes corresponding and sometimes differing in their nature; sometimes coming on simultaneously and

sometimes in succession ; and embarrassing the practitioner in his diagnosis, either simply by the complications of morbid phenomena to which they give rise, or by one set of symptoms obscuring the other.

243. Of these sources of difficulty and fallacy in diagnosis, — tending to lead the practitioner into one or other of two errors, that of supposing in particular cases the existence of morbid conditions which do not actually exist, or that of overlooking the presence of morbid conditions which do exist, — ample illustrations present themselves in investigating the symptoms of the diseases of the liver. There are few organs, in particular, in which so large an amount of disease, and that even of, what is usually termed, an acute character, may exist, as in this one, without being revealed by any symptoms which attract the attention of the patient or of those about him ; and in which, consequently, the practitioner, when called on to act, labours so much under the disadvantage of not having had it in his power to pursue active measures at the commencement of the disease.

244. “The symptoms of disease of the liver,” says an assiduous and discriminate observer, “are few in number, often too obscure, or too little marked to enable us, from a consideration of them, to affirm the existence of an affection of that organ. In other instances there is no doubt as to the existence of some affection, but it is very difficult, or even impossible, to determine its nature. For, on the one hand, similar symptoms are often produced by several affections of the liver which present the greatest differences in respect of their anatomical characters ; and, on the other hand, we cannot affirm that in any of these affections we meet constantly with any one symptom.” “The object of this article is to furnish some data that may aid, *1st*, In recognising the existence of disease of the liver ; and, *2d*, In determining its nature.” (Andral, *Clin. Med.* iv.)

245. In admitting the frequently obscure character of hepatic affections, we, at the same time, concur with Dr. Malcolmson, in thinking that it cannot be too strongly impressed on the young practitioner, that the obscurity of many cases arise from the carelessness of the patient, or from an insufficiently minute examination on the part of his medical attendant, rather than from the absolute absence of symptoms by which the existence of internal disorganization may be detected.

246. In reference to the subject of diagnosis, M. Broussais has remarked, with much truth, that it is in general advisable for the practitioner to confine his attention to the characteristic or leading phenomenon of diseases ; and that burdening the memory with all the symptoms that may accompany a predominant lesion, cannot fail greatly to embarrass him in his examination of individual cases. But in limiting, as much as possible, the number of symptoms on which we should rely in our attempts to arrive at a correct diagnosis between resembling diseases, it becomes the more neces-

sary to examine these symptoms thoroughly, so as to acquire an accurate knowledge of the various modifications which they may, under different circumstances, exhibit. This must be our apology for the fulness of detail into which, in the present chapter, we shall occasionally enter.

247. Before commencing the consideration of the particular symptoms by which the practitioner is led to recognise the existence of morbid alterations in the dynamical and structural conditions of the biliary organs, and by which he endeavours to discriminate the several diseases of these organs from one another, it may not be amiss to submit to the reader the following enumeration, given by Mr. Twining, of the diseases liable to be mistaken for affections of the liver; since it is obvious that the primary object which we must have in view in investigating these symptoms, is to ascertain what assistance they are calculated, individually or collectively, to afford us in the discrimination of hepatic diseases from those diseases that resemble, and even, occasionally, simulate them.

1st, Empyema, or hydrothorax of the right side of the chest.

2d, Disease of the right *lung*.

3d, Ulcers, and some chronic disorders of the *stomach*.

4th, Diseases of the *duodenum*, or of the *cæcum*, and a loaded state of those intestines, without actual disease.

5th, Scirrhus *pylorus*.

6th, Indurated *pancreas*.

7th, Induration of the transverse *colon* in severe dysentery, with a solitary large sloughing ulcer, and thickening of the coats at that part of the intestine.

8th, Adhesion of the *omentum majus* to the *cæcum*, or to the brim of the pelvis.

9th, Mr. Twining mentions, that in two cases of young women, he has seen an affection of the *spine* attended with pain at the right side, which had been mistaken for diseased liver, and treated with mercury, to the manifest disadvantage of the patients.

10th, Dr. Malcolmson has remarked, that water within the *pericardium* may be mistaken for diseased and enlarged liver; and in his practical Essay on Beriberi, he has recorded three striking examples of the difficulty which occasionally exists, in India, in making the distinction.

SECTION I.

OF PAIN CONSIDERED AS A SYMPTOM OF DISEASES OF THE BILIARY ORGANS.

248. Pain, as a symptom of affections of the biliary organs requires to be considered, 1st, as having its seat in the hepatic region, understanding, by that term, the space occupied by the liver, whether as of its natural dimensions, or as having undergone a more or less considerable degree of enlargement; and, 2d, as occurring *sympathetically* in some part of the body not occupied by the liver.

I. PAIN IN THE HEPATIC REGION.

249. Though the occurrence of pain in the hepatic region affords a *prima facie* presumption, it does not in itself constitute a conclusive proof, of the existence of disease in the biliary organs; for experience has shown that diseases of the neighbouring parts, in the thorax as well as in the abdomen, may occasion pains simulating very accurately, in their seat as well as in other qualities, those which arise from diseases of the liver and its appendages. Of this nature, according to Andral, are inflammation of the pleura, particularly its diaphragmatic portion; partial peritonitis in the vicinity of the liver; acute or chronic inflammation of the pylorus or of the commencement of the duodenum; nephritis; and tumours developed either between the kidney and liver, or below the gastro-hepatic epiploon. Mr. Twining points out adhesions of the right portion of the omentum to the cœcum, or to the brim of the pelvis, as frequently causing a pain at the epigastrium, or at the right portion of the colon and edge of the right false ribs, which is liable to be mistaken for liver disease.

250. For purposes of diagnosis, it would be highly desirable to be able to divide the diseases of the biliary organs into those which are liable to be accompanied by pain in the hepatic region, and those which are not attended by this symptom.

251. Do pains in the hepatic region accompany any diseases of the biliary organs of a simply dynamical character? M. Andral particularly notices that extremely sharp pains are sometimes observed in the hepatic region, which are not accounted for, after death, by the existence of any lesion in the liver or its excretory canals; and which, for various reasons, he regards as *neuralgic* affections of the pneumogastric or great sympathetic nerves. (*Clin. Med.* iv.) Dr. Cusack, in a paper entitled "Cases of certain Nervous Diseases, occurring principally in females." (*Dubl. Med. Jour.* vol. v.), gives an account of several cases of a hypochond-

driac neuralgic affection, which, when seated on the right side, is liable to be mistaken for inflammation or disease of the liver. (See also Cyclopædia of Medicinè, article Liver, Inflammation of, by Dr. W. Stokes.) If *spasmodic* affections of the gall-ducts actually occur, there can be little doubt that they will be accompanied with the production of pain, varying in its intensity according to the degree of spasmodic contraction, and the circumstances under which it occurs. When the biliary passages undergo, from any cause, a considerable degree of *distention*, within a short period of time, it can scarcely be doubted that this must be accompanied by painful sensations of a more or less severe description.

252. With respect to the structural diseases of the biliary organs, those most liable to be accompanied with a considerable degree of pain, seem to be gall-stones, inflammation, suppuration, and, according to Andral, the production of encephaloid matter in the inflamed texture of the liver; whilst those which most usually produce only a very obtuse pain, or none at all, comprehend a great number of the chronic affections of the liver, such as the development of hydatids; its fatty degeneration; its induration; its different kinds of general or partial hypertrophy (granulations, cirrhosis, &c.), and its general or partial atrophy.

253. But in respect to the diseases of the biliary organs, both dynamical and structural, which have been mentioned as being liable to be accompanied with pain, it is necessary to keep in mind, that this symptom, though a frequent, is not an invariable attendant upon them; and that, consequently, we are not entitled, from the absence of pain, to infer the non-existence of any of these diseases.

254. It would be very desirable also, to be able to avail ourselves, for purposes of diagnosis, of those diversities which pains occurring in the hepatic region, in consequence of various affections of the biliary organs, are liable to exhibit, particularly as respects their extent and more precise seat; the circumstances under which they are experienced; their intensity and general character, and their duration. A view of some of the principal diversities of hepatic pain in these respects, seems a proper introduction to any more particular attempt to connect particular forms of this symptom with particular forms of hepatic disease.

255. As regards *extent* and *seat*, pain, proceeding from diseases of the biliary organs, may be diffused very widely through the hepatic region, or it may be confined to a circumscribed point in it. Thus, in some persons, as M. Andral has observed, the whole of the lower part of the right side of the chest, and the hypochondrium of the same side, are the seat of a painful affection. In other instances, the pain is experienced in one or other of the following very various situations; *1st*, towards the epigastric region; *2d*, along the cartilaginous border of the false ribs of the right side; *3d*, in a more or less limited point of the right hypochondrium; *4th*, towards the lower and lateral part of the right side of the chest, and sometimes, in this case, in a very circumscribed

space, as, for example, that occupied by the last false rib of the right side; *5th*, posteriorly on the same side, near the vertebral column; *6th*, in the left hypochondrium at the space usually occupied either by the great end of the stomach, or by the spleen; *7th*, and lastly, at different points of the abdomen, such as the umbilicus, the flanks, &c., if they be occupied by the enlarged liver.

256. As respects the *circumstances under which pain* in the hepatic region *is experienced*, the principal diversities which present themselves are the following:—*1st*, The patient may be sensible of pain only when pressure, more or less forcible, is made with the hand or with the fingers, on the hepatic region; or the pain may be relieved, or disappear, under such pressure. *2d*, The pain may be felt only when the body is placed in particular positions, or subjected to particular motions; and, *3d*, The pain may be constant, independently of pressure, and under all conditions of the body in respect of posture, &c.

257. In respect of *intensity*, pains in the hepatic region, dependent on affections of the biliary organs, may present every degree, from the slightest to the most excruciating. It is scarcely necessary to observe, that these diversities in the intensity of this symptom may proceed partly from differences in the nature, and partly from differences in the degree, of the affection which it accompanies; and partly, also, from differences of individual constitution or temperament. In some cases of hepatic colic, death has occurred apparently as a consequence of the intensity of the pain. (Portal, p. 174.) “Very violent pains of the liver, from biliary calculi,” says M. Portal (p. 23), “sometimes cease as by enchantment, when the calculi have passed from the choledoch duct into the duodenum; such pains may, therefore, frequently be without danger, though intense. On the other hand, in persons suffering from severe scrofulous affections, pains in the liver, though so dull as to be scarcely sensible, often announce suppuration of that organ, without any suspicion of its existence being entertained.”

258. As to the *duration* of pain in the hepatic region, great diversity may also present itself; and, in particular, it may assume either a continued or an intermittent form. When the pain in the hepatic region is of an intermittent character, we are warranted in inferring either that the morbid condition on which it depends is one of an occasional nature, as spasm, neuralgia, or a shifting calculus; or that, if permanent disease exists, there is required for the production of pain, in addition to it, the co-existence of some other condition that is not constantly present, such as distention of the stomach, &c. Authors have related cases of what they have regarded as hepatitis attended with intermittent fever, of a quotidian, a tertian, a semi-tertian type, &c., in which the pain in the hypochondrium recurred, or became more intense, with each febrile paroxysm (*Mongellaz sur les Irritations Intermittentes*); but it

seems probable that the affection in these instances was spasmodic or neuralgic, and not inflammatory.

259. In respect of *character*, it has been supposed that the occurrence of sharp lancinating pains in the liver, as in some other organs, may be regarded as indicative of the existence of cancerous affection; but Andral has shown that pains of this character have occurred in persons labouring under hepatic affections not of a cancerous nature; and, conversely, that instances of persons affected with cancer of the liver experiencing very little or no pain, are nearly as numerous as those of persons so affected, who experience this symptom in a severe degree.

PAIN AS ATTENDANT ON BILIARY CONCRETIONS.

260. In employing the presence or absence of pain in the hepatic region, as a diagnostic character for determining the existence or non-existence of *biliary concretions*, it is necessary to keep in mind the three different situations in which these bodies may exist, viz., 1st, the gall-bladder; 2d, the gall-ducts; and, 3d, a passage formed by an ulcerated communication between the gall-bladder or ducts and the intestinal canal.

261. It seems to be universally allowed that biliary calculi may form and remain in the *gall-bladder* without discovering themselves by pain, or, indeed, by any other symptom whatever; so that they have been frequently found in this situation, in the bodies of persons in whom nothing had occurred during life, to suggest a suspicion of their existence. But it is alleged, that frequently, even while they remain in the gall-bladder, they occasion "a dull heavy pain at times, which may be increased by any extraordinary motion, or by a distention of the stomach; for which reason such patients usually feel themselves most uneasy after eating. In some instances the pain has been very great; rarely, indeed, if ever, so violent as it is from stones passing the ducts, though more constant and durable, especially when, by the largeness or situation of the stone, it has pressed upon the neighbouring parts." (Dr. Coe, p. 184.) "In some patients, the pain is like a fit of the colic returning at times." (P. 186.) It may be questioned, however, whether these and other concomitant symptoms that have been noticed in cases of concretions in the gall-bladder, must not have had some different origin than the simple presence of these bodies in that situation.

262. In the *gall-ducts*, as in the gall-bladder, a concretion may lie in a dormant state without producing pain. But when a calculus is in progress of propulsion through the ducts, it, in many instances, gives rise to most intense pain. The character of the pain which usually attends the passing of biliary concretions along the gall-ducts, has been frequently and perhaps variously described. According to Dr. Coe, "the patient is seized with a sudden, violent, somewhat deep-seated pain, either at the pit of the stomach, or

more inclining to the right side, which is sometimes more constant, but for the most part has exacerbations and remissions, in the manner of labour-pains." "The pain is, for the most part, extremely acute; as violent, perhaps, as any the human body is naturally subject to." "All the women I have seen in this disease, have compared the pains of it to those of labour, but agreed unanimously that they are more violent than labour-pains." Dr. Powell in describing this pain as a "violent and acute pain at the pit of the stomach, more so, apparently, than that which attends upon acute inflammation," remarks; "this pain seems generally to be confined to that point of the epigastric region which very accurately corresponds to the situation of the opening of the common duct into the duodenum, and from thence it appears to dart through to the back. The pain is clearly referred to one spot, and that most probably not the actual one where the concretion is present, but in whatever part of the duct that may be, the sensation is at the termination of the canal in the duodenum." According to Dr. Pemberton, "the pain proceeding from spasm or from gall-stones is most acute exactly at the pit of the stomach; but from this spot, as from a centre, there is a diffused pain over the whole of the epigastric region, and this pain often extends to the right side and to the back." Dr. Bright, in remarking that the pain with which the passing of biliary calculi is generally accompanied, may be considered one, at least, of the most prominent symptoms which attend this disease, says; "That pain is of two kinds — a dull aching pain, which is constant; and an acute and agonizing pain, which comes and goes in paroxysms:" and Dr. Pemberton observes, that "though the patient, during the passage of a gall-stone, is never free from some pain, yet it increases by paroxysms, into a state of acute suffering, and subsides again into one of comparative ease; and these paroxysms occur several times in an hour." But the last-mentioned author, in remarking that the pain seldom lasts, without intermission, above two or three days, adds, that he remembers it continuing it in one person near a month, without any intervals of ease, except what were procured by opium.

263. What are the circumstances which can be supposed to determine the non-occurrence or occurrence of pain during the passage of a concretion along the gall-ducts, and its degree of intensity? The most obvious of these seems to be the proportional size of the concretion and of the duct, both of which may vary greatly in this respect. Their relative dimensions may be such as to enable the concretion to pass easily, in which case, probably, no pain will arise; or they may be such that a very slight degree of distention will suffice to allow of the concretion's passage; or, lastly, they may be such as to require a great degree of distention before the passage of the concretion can be effected, in which case, we may presume, the intensity of the pain will be greatest.

264. But, besides the simple *distention* of the coats of the ducts occasioned by a concretion in its progress through them, if we

admit that the gall-ducts are susceptible of spasmodic *contraction*, we can imagine this state to be excited by a concretion so situated; and in the occurrence of this spasmodic contraction, perhaps, may be the explanation of the intensity of the pain that is experienced in some cases in which the size of the calculi is by no means considerable. If, indeed, it be generally true, as has been alleged, that large calculi occasion less pain than small ones, during their progress through the gall-ducts, it does not seem obvious on what other principle this can be explained, except the less liability of a large than of a small body to produce spasm, in its passage through an irritable muscular canal; as surgeons frequently find to happen in the introduction of instruments into the urethra and œsophagus.

265. Whatever may be the influence of these, and other local circumstances, in determining the amount of pain resulting from the passage of gall-stones along the ducts, it seems very probable that this must, in a considerable degree, be influenced by individual constitution; so that in two cases of this kind, apparently identical in their circumstances, in the one there shall be intense pain, while in the other it shall be entirely wanting, or trivial in amount.

266. Some of the phenomena which accompany pain when it arises from spasm of the gall-ducts, or from the passage of biliary concretions along them, serve, perhaps, more effectually than any characters of its own, to distinguish it from pain dependent upon inflammation. (1) "The pain of gall-stones is commonly attended," as Dr. Coe remarks, "with great sickness and vomiting, with faintness, shortness of breath, great restlessness, and anxiety." "The breath," says Powell, "becomes short and hurried; there is a great general anxiety and restlessness, often amounting to delirium, and at last great depression and fainting; the stomach is affected by nausea, and there are frequent efforts to vomit." (2) When an intense degree of pain occurs as a consequence of *inflammatory action*, we may expect it to be accompanied with a febrile excitement of the circulation; but nothing of this kind attends the pain arising from spasm, or from the passage of gall-stones. Dr. Pemberton, accordingly, mentions the circumstance of the pulse not being 100 in a minute, as one of the characters by which the pain of gall-stones or spasm may be distinguished from that which attends inflammation. And the more exquisite the pain is, says he, provided the pulse is below 100 in a minute, with the more confidence may we rely on this diagnostic symptom; inasmuch as the only other condition from which such pain could arise is the inflammation of a membrane, in which case, the pulse would far exceed the number specified. (3) The occurrence of perspiration, as a consequence of the pain occasioned by spasm or gall-stone, is another mark by which we may be assisted in determining its non-inflammatory character. "The severity of pain is so extreme," says Dr. Bright, in speaking of the passage of gall-stones, "as to bring on a state of the greatest exhaustion, and reduce the

pulse below the natural standard, both as to strength and frequency, or, still more often, to render it rapid and weak, while the hands and the whole surface are bedewed with a cold perspiration."

267. There seems reason to believe that, in some of those cases in which calculi have made their way from the gall-bladder or ducts into the intestinal canal, by perforations in their respective coats, the whole of this process has been effected, without any considerable degree of pain having been produced.

PAIN AS ATTENDING INFLAMMATORY AFFECTIONS OF THE LIVER.

268. In the study of pain as a symptom of *inflammation of the liver*, the pathologist has a twofold object; 1st, to ascertain in what respects inflammatory hepatic pain differs from pain produced by other affections of the biliary organs; and 2d, to discriminate those particular variations in inflammatory pain of the liver, which depend upon, and are indicative of, the various seats of the inflammation, as regards texture or region of the organ, as well as the degree of the inflammation and its state of advancement.

269. It is with neuralgic pains, or the pains produced by the passage of gall-stones through the ducts, that, in its more intense degree at least, inflammatory hepatic pain is most likely to be confounded.

270. But, in the *first* place, inflammatory pain is to be distinguished from the spasmodic and cholelithic, by the gradual mode of its development as contrasted with their suddenness of suppuration; by its permanence, as compared with their paroxysmal character; and by its gradual mode of cessation.

271. In the *second* place, the effect of posture or of pressure in increasing or diminishing hepatic pain, affords much assistance in discriminating its proximate cause. "In those who have biliary calculi," says M. Portal, p. 23, "the pain is sometimes of extreme severity, with vomitings, convulsions, &c.; and yet when we touch or slightly compress the part, we by no means excite such an increase of pain as would be produced if the pain of the liver proceeded from any other cause, particularly if it was inflammatory." In the case of spasm or gall-stones, according to Pemberton, "the greatest relief from pain is experienced by bending the body forward upon the knees," and pressure on the part affords relief. The pain of inflammation is increased by pressure, in proportion as the inflammation is nearer to the surface; and the posture and motions of the patient are regulated, as far as possible, with a view to avoid pressure upon the inflamed parts.

272. It is generally specified as a character of *hepatitis*, particularly in its acute form, that the *decubitus* of the patient, according to the technical expression, is on the right side; lying upon the left

side being attended with pain, in consequence, it is presumed, of the weight of the organ stretching the over-sensitive nerves. When the liver has undergone a great degree of *enlargement* from any cause, if the patient attempt to lie on the left side, the nerves, though they may not be over-sensitive in themselves, will undergo a proportionally increased degree of stretching, and the weight of the liver will also compress other organs. Hence, in such cases, also, the decubitus will be on the right side.

273. Dr. Malcolmson remarks (1.) that, when an *abscess* of the liver is of considerable size, or adherent, the position assumed by the patient is often very striking, the distention of the abdomen and pressure of the diaphragm causing him to seek relief by drawing up the thighs on the abdomen, and bending the body to the right side; or by sitting up in bed leaning to the same side. This circumstance, he observes, will help to distinguish the disease from water in the pericardium, and some other complaints, with which it has been, and may again be confounded. (2.) The same author mentions the patient's lying on his back, a little turned to the right side, as a position so characteristic of hepatic inflammation, that an observant practitioner may often detect the existence of hepatitis from this circumstance alone; and he ascribes the patient's preference of this posture, to the ribs being pushed against the diseased liver by the weight of the body, on his attempting to lie wholly upon the right side. (3.) When, however, it is the left lobe that is principally diseased, or when this lobe is enlarged, and pressed on the diseased right side of the organ, it is not uncommon, Dr. Malcolmson remarks, for the patient to lie most easily on the left side. (Edin. Med. Surg. Journ., lii. 377, 359.)

274. In the *third* place, the seat of the pains produced by spasm of the gall-ducts, or the passage of calculi along them, is very uniformly the pit of the stomach, and diffused from thence, as from a centre, over the whole of the epigastric region. There is likewise, when this pain assumes a shooting character, great uniformity in the direction which it follows, viz., it darts through the back to the right side. The pain arising from hepatic inflammation may occur in a number of situations in which that dependent on spasm or gall-stone never occurs.

275. Supposing the dependence of pain in the hepatic region upon an inflammatory affection of the liver, to be satisfactorily established, we have next to consider what assistance we may derive from its particular characters, in judging of the various circumstances of the inflammation, as respects its seat, its intensity, and its stage of advancement.

276. As respects the *seat of the inflammation*, (1.) the intensity of the pain may afford us some little assistance in judging whether it affects the surface or the substance of the liver; the pain of membranous hepatitis being usually of a more acute, and that of parenchymatous hepatitis of a duller character. The pain of membranous hepatitis, also, is more liable to aggravation, by every

position, motion, or other cause, that subjects the parts to compression or distention. (2.) The seat of the pain may, in part, assist us in judging in what particular portion of the liver the inflammation is seated; but, in judging of this, probably more dependence is to be placed on the marks of functional disturbance furnished by the organs contiguous to the liver. Thus, when the upper or convex surface of the liver is the seat of inflammation, it may be expected that the *lungs* will exhibit marks of being involved in the affection to a greater or less extent; and when its lower or concave surface is inflamed, the *stomach* may, in like manner, be expected to participate.

277. No very accurate judgment respecting the *intensity of the inflammation* can be formed from the intensity of the pain; for this is subject to great variations independently of the degree of the inflammation; — variations attributable partly, as we have seen, to diversities of the tissue affected, but partly, also, to peculiarities of individual constitution which we are, perhaps, unable altogether to appreciate. It is to such inappreciable causes that we must attribute the not unfrequent occurrence, both in hot and in temperate climates, of inflammatory affections of the liver, advancing pretty rapidly to suppuration, without producing such a degree of pain as to lead to a suspicion of their existence; of cases, in short, of latent hepatitis.

278. As to the *stage of advancement* which the inflammation may have attained, the supervention of suppuration is perhaps the period in the progress of inflammatory affections of the liver, which it is of most importance for the practitioner to be able to discriminate. But of this stage of hepatitis, as Mr. Annesley remarks, "pain is a very uncertain symptom. At the period of tumefaction or enlargement of the organ which, in the more acute cases, precedes the formation of matter, the pain is sometimes considerable, and is afterwards converted into a throbbing or beating sensation, accompanied by shooting or darting pains in various directions. When, however, abscess is fully formed, a pricking pain is often only felt, and chiefly in the situation where the abscess is pointing. In the more chronic cases, the pain is often not much felt in the region of the liver, and this pricking sensation is the only uneasiness felt in that situation, and sometimes the only notice we receive of the existence of abscess, unless our attention has been particularly directed to the subject. In such cases, however, pain will generally be complained of on sudden motion, on quick respiration or action of the diaphragm, as in sneezing, coughing, &c." According to Dr. Malcolmson, "pain on slight pressure, when fixed, or when it returns to the same spot, especially in the lumbar region or between the ribs, is a serious symptom; and, when accompanied by emaciation and evening fever, however slight or irregular, will be too often found to be caused by the formation of adhesions or abscess. When the tenderness arises from rheumatism, or from sympathetic affection of the muscles, from mere disorder of the

functions of the liver, it is for the most part transitory, diffused and seldom fixed in the same spot; and when from the latter cause, is never severe."

II. SYMPATHETIC PAINS, OCCURRING IN HEPATIC AFFECTIONS.

279. We have, in the next place, to offer a few remarks on the pains occurring in different parts of the body, external or internal, as sympathetic effects of diseases of the biliary organs, and particularly of the liver, by which the suspicions of the medical practitioner, unless he be aware of this source of deception, may be entirely withdrawn from the actual seat of disease, to an organ or part that is not really affected.

280. The seat in which such a sympathetic pain most frequently occurs, or at least, in which its occurrence has been most frequently noticed, is the right shoulder, a fact of which no satisfactory explanation seems yet to have been proposed. Nor does it seem to be well determined in what affections of the biliary organs sympathetic pain in this situation is liable to occur. Its frequent occurrence in hepatitis has been long noticed, and has led even, in some instances, to the idea of its being a pathognomonic symptom of that disease. But a considerable number of years have now elapsed since Mr. Curtis pointed out that, in India at least, pain in the right shoulder is far from being a uniform symptom of hepatitis, though he concluded that, when it does occur, it renders the nature of the disease very certain. The subsequent experience of Louis and Andral in temperate climates, and of Annesley in India, have confirmed the correctness of Curtis's statement respecting the frequent absence of this form of pain, in cases of hepatitis. M. Louis goes the length of expressing a doubt "whether this symptom really belongs to hepatitis;" but Mr. Annesley's more extended observation fully confirms that of Curtis, for he, too, says, that, when present, it is certainly characteristic of the disease in the right lobe.

281. But though, in India, hepatitis may be the disease in which the occurrence of this symptom is most frequently noticed, it does not follow that it occurs exclusively in this affection. Dr. Coe mentions "a considerable pain in the right shoulder, or arm, or both," as a symptom which sometimes attends stones in the gall-bladder, whether they are of the larger or smaller kind; and he also mentions, among the signs of gall-stones passing through the ducts, that "sometimes a pain is felt in the shoulder and arm on the right side." Dr. Powell observes, that, "in acute inflammation of the liver, as in some cases where it has been wounded, and, it is said, occasionally too from the passage of concretions, the pain is felt chiefly at the top of the shoulder, and sometimes this has been the only spot of which the patient has complained." To these authorities respecting this symptom, we shall add only that

of M. Andral, who, in observing that it has long been remarked that *several affections* of the liver are accompanied by a fixed pain in the right shoulder, adds, "This pain has appeared to us to occur less frequently than has been alleged; yet, in more than one case, we have observed it in a very marked degree."

282. The fullest enumeration with which we are acquainted of the other seats, besides the shoulder, which pain, occurring as a sympathetic effect of disease of the biliary organs, may occupy, is that given by Mr. Annesley in reference to inflammation of the substance of the liver. After mentioning that the pain accompanying this affection is sometimes referrible to the top of the right shoulder, frequently to the right shoulder-blade, and occasionally to both shoulder-blades, he proceeds: "It is, on some occasions, seated on the back, between the lower angles of the shoulder-blades; and, in some instances, the only pain which has been complained of has been in the loins. We have observed it, in a few cases, in the right clavicle and its vicinity, and, in others, in the left shoulder and shoulder-blade only." "We have seen a few cases where pain followed the course of the muscles of the right side of the neck; it often extends from under the ensiform cartilage, in the direction of the mediastinum, to between the shoulder-blades." "Pain frequently also extends from the right side, under the shoulder-blade, to the spine, where it terminates."

283. Dr. Malcolmson, in his *Essay on Abscess of the Liver*, mentions several additional seats of pains occurring as sympathetic consequences of hepatic affections. "Pain at the nipple," says he, "is a common symptom in deep-seated liver-diseases, even where the diaphragm and the lungs are unaffected. Pains at the extremity of the sternum, or shooting under the ribs and across the back, are also to be looked for; nor is their shifting nature, nor the ease with which they are removed for a time, any proof that the disease is not of a serious nature. The rarer symptom of pain in the right hip" (which occurred in a case that is related by Dr. M.), "may have been caused by irritation of the nerves, by the abscess—afterwards found to exist—in the posterior part of the right lobe; and such anomalous pains are never to be overlooked. They are occasionally felt in the right knee or foot, in both the lower limbs, in the nucha or back of the head; and depend on the same cause as the more common symptoms of pain at the top of the shoulder and the side of the neck, or of numbness of the upper two-thirds of the arm, or down to the middle of the forearm, which, however, are often absent, or of very temporary duration." It may here be noticed, that Dr. O'Brien states himself to have met with several instances of hepatic affections, in which so severe a pain was felt in the os ilii and hip on the right side, as to give the patient a lame step. (*Dubl. Med. Trans.* i. 363.)

284. We may refer here also to a case described by Andral, in which the liver was found, after death, filled with cancerous masses; and in which, during life, the patient had never com-

plained of any pain in that region, but had experienced, from time to time, "a very painful sensation in the two sides of the chest, that soon extended to the arms and to the hand; the latter, in particular, was the seat of a very disagreeable creeping sensation; sometimes one or other arm was seized with very sharp, lancinating pains, passing like flashes." The same author, in reference to the pains occurring as sympathetic effects of diseases of the biliary organs, notices that, in some cases of affection of the liver, the only pain experienced by the patient has been seated in the head; and this has sometimes been sufficiently intense, constant, and long continued, to fix exclusively the patient's attention.

285. In the instances hitherto quoted, the pains occurring sympathetically in diseases of the biliary organs have been referred to external parts; but, in other instances, they seem to occupy a position in some of the internal viscera. Baillou, who believed melancholy to have its principal seat in the liver, had remarked, that frequently those labouring under this disease, in place of experiencing the pain in that region, refer it to the chest. "At other times," says M. Portal, in reference to this observation, "those who labour under alterations of the liver experience pains in the heart, and more frequently in the stomach. Others have referred them, in the left hypochondrium, to the spleen; others, to the umbilicus, to the small intestines, to the kidneys, and principally to the right. All these differences in the seat of the pains arise, no doubt, from the nerves of the region of the liver, which is the seat of affection, having correspondencies with particular nerves of the parts that have been named; whence it may happen that a lesion of the liver, producing little pain in that organ, gives rise to a much more severe pain in those named, especially in the stomach, the most sensible of all.* In this case, we might easily be deceived as to the seat of the cause of that pain, which, though actually in the liver, would not be referred to it by the patient." (P. 21.)

* The influence of inflammation of the liver in producing a considerable proportion of the pains falsely attributed to the stomach under the name of Cardialgia, &c., was particularly insisted upon by Ferrein in a Memoir published in the Transactions of the Royal Academy of Sciences for 1766 (4to, p. 121). The late Dr. Conwell, in his Treatise on the Liver, alleges, that "when a nerve, composed of ganglionic and cerebro-spinal filaments, sustains injury from inflammation, &c., in the liver, the ganglionic filament does not announce it by pain, but the cerebro-spinal filament does, and *the pain is felt at the opposite and remote extremity of the cerebro-spinal nerve*. The symptoms of hepatic disease," he adds, "prove this. Accordingly, a chart, exhibiting the opposite and remote distribution of the cerebro-hepatic nerves and of the cerebro-spinal nerves corresponding to them, would indicate the situations of disease in the liver, from the seat of the symptomatic pains occasioned by it." Dr. Conwell has proceeded with most praiseworthy industry to trace the course of all the nerves which he considers related to the liver; but unfortunately, upon this, as on various other occasions, the reader has to regret that this author's discrimination in the use of his materials is not equal to his assiduity in their collection. His suggestion, however, is one well deserving of being followed out.

SECTION II.

OF SWELLING, CONSIDERED AS A SYMPTOM OF DISEASES OF
THE BILIARY ORGANS.

286. Next, if not equal in importance, in the diagnosis of diseases of the biliary organs, to the symptom of Pain, is the ascertainment of the existence or non-existence of Swelling in the hepatic region, and, in the event of its existence, the determination of its characters.

287. The material causes having their seat in the biliary organs, upon which such swelling may depend, are, *1st*, An increased accumulation of blood in the vessels; *2d*, Distention of the gall-passages; and *3d*, The deposition of foreign matters, either of a fluid or solid character, in the parenchymatous structure of the liver. How much such a swelling may vary in amount, is obvious from the fact, that the weight of the liver may be increased, from its natural standard of between 2 and 5 lb., to not less than six times the latter weight, and even upwards.

288. From whatever cause the swelling may proceed, it may either be manifest upon *simple inspection*, or it may require careful, and even expert, *manipulation* for its discovery; to which means of investigation may be added those of *percussion* and *auscultation*.

289. Some of the Indian writers on diseases of the liver, recommend that the *inspection* of the hepatic region, with a view to determine the existence or non-existence of swelling of the biliary organs, should be made, not from one or other side of the patient's bed or couch, but from the foot, as enabling the eye to compare with more precision the relative conditions of the two hypochondria.

290. *Percussion* of the hepatic, as of the other regions of the body, may be performed either by striking the fingers directly upon the part to be examined, or — what is much better — by interposing one of the fingers of the other hand between the part percussed and the fingers employed in percussing; or, lastly, by the interposition of the instrument termed the Plessimeter, consisting of a small plate of bone or ivory, of moderate thickness, with two flat surfaces, and with some roughness or irregularity upon its margin, to enable the fingers which hold it to press it down firmly upon the surface to which it is applied.

291. It may be proper here to recall some of the principal facts that have been ascertained relative to the percussion of the liver in the state of health. We shall suppose the individual under examination to be in the erect posture.

292. In the state of health, the right side of the chest emits the clear *pulmonary* sound throughout its whole extent, from the top

of the lungs down to the sixth or seventh rib. From the sixth rib, or a little lower down, a diminution of the clearness of the pulmonary sound begins to be perceptible, indicating that we are approaching the liver, as it lies sunk in the hypochondrium. On gentle percussion, however, the dulness of the *hepatic* sound is at first little marked, in consequence of the thin lamina of lung that is here interposed between the liver and the costal parietes, but it is more evident in proportion as percussion is performed with an increased degree of force. Lower down in the hypochondrium, where there ceases to be any pulmonary substance interposed between the liver and the parietes, the dull hepatic sound manifests itself upon the gentlest percussion, and continues downwards to the margin of the false ribs, beyond which we come upon the clear sound of the intestines. As a thin layer of pulmonary substance, lapping over the upper part of the liver, masks, by its sonoriety, the dull hepatic sound; so, a thin layer of hepatic substance, projecting a little way over, or in front of, the stomach and intestines, masks the transition from the dull hepatic, to the clear intestinal, sound.

293. The distance between the points on the surface of the costal parietes, where the dull hepatic sound commences and those where it terminates, represents, of course, the vertical height of the liver and of the right hypochondrium. By repeating the percussion in a vertical direction, or from chest to abdomen, at different distances, and always in parallel lines, and by marking each point of change of sound on the upper and lower margins of the liver, we may obtain an exact idea of the limits of that organ *superiorly* and *inferiorly*.

294. Examined transversely, the costal parietes, seated between the sixth rib and the border of the false ribs, on the right side, — those, in short, which cover the right hypochondrium, will emit, on percussion, almost throughout their whole extent, the dull hepatic sound; but this dulness will differ in degree, according to the height at which the chest is struck, just as in vertical percussion. *Outwards*, the dull sound extends to the posterior surface of the body, marking the prolongation of the liver backwards. *Inwards*, it terminates within the mesial line; towards the upper part, the internal limit of the dull sound of the liver is about an inch, or an inch and a half, within that line, beyond which the pulmonary sound is distinguishable as far as the heart; towards the lower part, the dull hepatic sound extends a little beyond the inner margin of the cartilaginous border of the right false ribs, as comprised between the projecting angle towards the ninth rib, and the ensiform cartilage; and it approaches here a little closer to the mesial line than it does superiorly. By joining the extreme points that have been mentioned, we obtain the *internal* boundary of the liver.

According to the experiments of M. Piorry, the liver presents from $2\frac{1}{2}$ to 3 inches in vertical height, at the part nearest to the

sternum ; 4 inches, more exteriorly, and from 4 to 5 inches, in the lateral region. Its transverse diameter is from 10 to 12 inches.

295. When the liver undergoes enlargement, whether general or partial, the direction in which it extends, is by no means uniform. *1st*, Sometimes (still understanding the patient to be in an erect posture) the enlargement is upwards, towards the cavity of the chest, pushing before it the diaphragm and the lungs. *2d*, Sometimes it is downwards, towards the abdominal cavity, so as to protrude from below the costal parietes. *3d*, Sometimes it is forwards, so as to occasion more or less displacement of these parietes. And, *4th*, It may extend at the same time in more than one of these several directions.

296. It must always be kept in mind, in endeavouring to trace the boundaries of the liver, that this organ may undergo displacement, in precisely the same directions in which it may undergo extension from enlargement ; and the means of distinguishing between these two states of the organ, viz., its enlargement and its displacement, require to be kept steadily in view.

ENLARGEMENT OR DISPLACEMENT OF THE LIVER UPWARDS.

297. The suspicion of the liver having undergone enlargement, or displacement, upwards, may be excited by a greater or less degree of oppression of breathing being experienced by the patient. It is obvious that, if the liver has actually undergone one or other of these changes, it will be found, upon percussion of the right costal parietes, that the dull hepatic sound has gained, to a proportional extent, upon the clear pulmonary sound. The amount of the change may be judged of pretty nearly, by the height to which the dull hepatic sound rises above the sixth rib. To determine whether the change consists in the enlargement or displacement of the liver, it is proper to ascertain the situation of its lower margin. If this be natural, or lower than natural, we conclude that the elevation of the upper margin is the effect of enlargement ; but, if the lower margin be elevated above its natural position, we infer that the liver has undergone displacement, from some force pushing it upwards. It may even happen sometimes, in cases of enlargement of the left lobe, that a dull sound is emitted from the left hypochondrium, similar to what is more frequently produced in that region by tumefied spleen.

298. Dr. Malcolmson has recently pointed out another physical sign of the encroachment of the liver upon the lungs, derivable from the use of the stethoscope, viz., a loud sound between a crepitous rattle and a bleating, audible to the patient and even to the bystander, and accompanied by a vibration of the parietes of the thorax, communicated to the hand applied to the part. In a case which he details, Dr. Malcolmson satisfied himself that the sound in question was caused by the thin edge of the lung being com-

pressed against the pleura by the enlarged liver. Dr. Malcolmson mentions, that when enlargement of the liver takes place, either from congestion or chronic inflammation of the right lobe, or abscess of its convex surface, the tendency to encroach on the cavity of the chest is so great that he has found the use of percussion and the stethoscope lead to the detection of enlargement of the viscus, more frequently even than examination below the margin of the ribs.

299. An obvious source of fallacy to which we are exposed, in judging of the position of the upper margin of the liver, is the occurrence of changes within the thoracic viscera themselves, that will cause the clear pulmonary sound to be replaced by a dull sound, bearing more or less resemblance to the hepatic. These changes may consist in effusion into the cavity of the pleura, in infiltration of the substance of the lungs, in pneumonia, &c. For the discrimination of the enlarged or displaced liver from changes such as these, it is to be kept in mind, 1st, That when there is a fluid free in the cavity of the pleura, change in the patient's position causes a variation in the seat of that fluid, and consequently of the dull sound which it emits; whereas change of position exerts scarcely any influence on the situation of the liver, or, consequently, of the hepatic sound; and, 2d, that the sound emitted, by portions of infiltrated lung, and even of lung that has been the seat of pneumonia, at least in its early stages, is not so dull as that emitted by the liver.

300. It is conceived, that, upon the same principle on which percussion enables us to detect that the liver has undergone such *enlargement* as to cause it to extend upwards or downwards beyond its natural boundaries, so it may enable us to recognise those cases in which that organ undergoes a *diminution* of its dimensions,

ENLARGEMENT OR DISPLACEMENT OF THE LIVER FORWARDS.

301. The liver occasionally enlarges in such a way as to throw forward, or cause a bulge of, the costal parietes of the right hypochondrium, particularly their cartilaginous portion. The cases in which such a projection of the costal parietes forwards takes place, seem to be chiefly instances of the development of enormous enccephaloid tumours in the substance of the liver, or of hydatid cysts in its substance or upon its inferior surface.

ENLARGEMENT OR DISPLACEMENT OF THE LIVER DOWNWARDS.

302. The hepatic swellings, respecting which the practitioner is most frequently called on to exercise his powers of diagnosis, are those which are situated in the abdominal cavity, below the mar-

gins of the false ribs. Here, again, it is necessary to remember that the presence of the liver in a preternatural situation, may depend either upon its enlargement or upon its simple displacement. In cases in which the abdominal parietes are thin, and there is no preternatural accumulation within the cavity of the peritoneum, enlargement or displacement of the liver downwards may be obvious to simple inspection; but to trace the extent and direction of the change, there is need both of manual and digital examination through the integuments, or of palpation, as it is termed by French writers, and of percussion.

303. In proceeding to conduct a *manual examination* for the detection of enlargement or displacement of the liver beneath the costal margin, there are two preparatory precautions of much importance. The *first* is to place the patient in such a position, and to adopt such other measures, as are best calculated to produce the most relaxed condition of the muscles of the abdominal parietes that can possibly be effected. With this view, he should be laid on his back, with his legs flexed upon his thighs, and his thighs flexed upon the abdomen. Care must be taken that the hands of the examiner shall communicate no sensation of coldness to the patient, and that they are applied in such a delicate and gradual manner, as not to excite uneasiness or apprehension. With all the precautions that can be used, if the examination gives rise to pain, the patient is very liable to contract the abdominal, and particularly the recti muscles, even against his own intentions, so as to render it impossible to ascertain the condition of the interior of the abdomen, and to deceive those who, not being on their guard against this source of fallacy, mistake the contracted muscles for tumour in the abdominal cavity. Mr. Twining considers as a very common and important symptom of an incipient tendency to central abscess in one or other lobe of the liver, a great degree of tension of the corresponding rectus abdominis muscle, which resists pressure by a quick involuntary action, while the other is lax, and other parts of the patient's belly are comparatively soft and elastic. (i. 243.)

304. The *second* precaution is to use those means which are likely to bring a swelling or tumour in the hepatic region, supposing it to exist, into such a position in the abdominal cavity as, from the pliancy of the parietes, will be favourable for its detection and examination. It is on this principle, that writers on liver-diseases, recommend that the hand not engaged in the actual manipulation, should be employed in raising the right false ribs and side, so as to carry the liver forward. For the same reason, such a slope should be given to the upper part of the body, as will assist the liver in descending in the abdominal cavity by its own weight.

305. When the practitioner is satisfied that matters are favourable for his examination, he has first to investigate, by cautious pressure, whether any foreign mass occupies that space beneath the cartilages of the false ribs, which, in health, is occupied by folds

of the intestinal canal ; and if so, how far this foreign mass extends ; and having procured as much information as he can on these points, he has next, by the cautious insinuation of his fingers, to endeavour to trace out the margin or boundaries of the mass, in its various directions, with a view to satisfy himself whether it actually be formed by the liver, or by some neighbouring organ in the state of disease ; as the stomach, the duodenum, the omentum, the pancreas, or even more remote organs, as the ovarium. The circumstance on which he must chiefly rely in his judgment on this point is, the possibility of tracing the passage of the mass upwards behind the cartilages of the ribs, in which case the presumption is strongly in favour of the liver being the seat of disease ; or, on the other hand, the possibility of tracing the boundary or margins of the mass as it approaches towards the proper seat of the liver. Another ground of distinction, by which he may be aided in his diagnosis, is, that hepatic enlargements are necessarily fixed in their positions, whilst most of the tumours that simulate them, admit of a greater or less degree of motion.

306. It is obvious, that, just in the same way as we endeavour to trace the continuity of any tumour, in the abdominal cavity, with the liver, by means of palpation, we may also endeavour to determinè the question of its continuity, by means of percussion. If we find the hepatic sound to pass without interruption, and without considerable modification of its character, into the tumour, we shall be led to believe, that it does in fact proceed from the liver. Conformably with this view, it is stated by M. Piorry, that, in cases in which there exist, at the same time, an enlargement of the liver, with a tumour or encysted dropsy in the cavity of the abdomen, percussion will often enable us to ascertain whether these affections be connected with the liver, or whether they are separated from it. Sometimes the dull hepatic sound will be succeeded lower down in the abdomen, by a dull resonance of a different character, proceeding from the tumour, and terminating on a line corresponding with the border of the liver. This may occur if the morbid growth is in immediate contact with the liver, and differs from it in density. In other instances, a fold of intestine may be situated between the liver and the tumour, and the clear sound which it will emit, upon percussion, will sufficiently establish that the accidental growth is independent of, or distinct from, the liver.

307. Even when we can distinctly trace the sharp edge of the liver protruding beneath the costal parietes, this protrusion, as already suggested, may be the effect not of an enlargement of this organ, but of its displacement by disease of other parts, as by an effusion into the right cavity of the chest pushing down the diaphragm.

308. According to Dr. Stokes, when empyema occurs to a considerable extent upon the right side of the chest, the diaphragm, being displaced or protruded into the upper portion of the abdomen,

where it may be found full and resisting, pushes the liver downwards, forwards, and across this cavity. When the liver is thus displaced, a tumour corresponding to it in size is found in the right hypochondrium, frequently accompanied by a distinct sulcus, immediately below the ribs, and above the upper boundary of the tumour. This sulcus results from the space left by the touching of the two convex bodies, namely, the protruded diaphragm and the upper portion of the liver. On the absorption or evacuation of the empyematous fluid, the liver ascends and the sulcus disappears. The disappearance of the sulcus, however, does not necessarily imply the ascent of the liver to its natural position, for that organ may yield to the pressure of the diaphragm, and become deeply concave on its upper surface. This, Dr. Stokes states to have occurred in a case in which the liver was softened and engorged, so that the disappearance of the sulcus is favourable only when accompanied by the ascent of the hepatic tumour. (On the Chest, &c.)

309. It is necessary also, in attempting to form a judgment as to the source of any swelling or tumour that may be discovered in the hepatic region, to remember that, though in many cases the enlargement of the liver is general, all its parts being equally affected, yet, in particular cases, the several portions of this organ undergo enlargement, from different forms of disease, separately. The left lobe may remain of its natural structure and dimensions, whilst the right lobe is diseased and enlarged; or *vice versa*. Consequently, the circumstance of a swelling or tumour being limited to the right or to the left hypochondrium, or to the epigastrium, is not sufficient to disprove its being seated in the liver.

310. When the existence of a swelling or tumour in the hepatic region, and its connection with the biliary organs, have been satisfactorily ascertained, we have next to inquire how far the character of the swelling, considered by itself, can guide us in judging as to the nature of the disease which has produced it? The first point to be ascertained is, whether the bulk of the tumour consists of fluid or of solid matter, and this, of course, is to be determined by its yielding or not yielding a feeling of fluctuation, when carefully examined.

DISCRIMINATION OF FLUCTUATING TUMOURS.

311. The diseases connected with the biliary organs which produce a *fluctuating* tumour, are hepatic abscess, serous or hydatid cyst, and distention of the gall-bladder, whether with bile, or with a fluid secreted from its own internal surface; or with both kinds of fluid combined in various proportions.

312. M. Petit, the son, many years ago, in some remarks published in the first vol. of the Memoirs of the Royal Academy of Surgery, pointed out the grounds of diagnosis between hepatic

abscess and distention of the gall-bladder, so far as this is to be derived from the swelling. The following are the characters on which he insisted :— 1st, The tumour caused by hepatic abscess is not circumscribed, but appears merged in the neighbouring parts, and, as it were, lost in the integuments, which are usually œdematous; whilst that produced by swelling of the gall-bladder is exactly defined and distinct, being seldom accompanied with œdema. 2^d, The tumour formed by the distended gall-bladder is always situated beneath the false ribs, behind the rectus muscle; but that depending on abscess of the liver is very variable in its situation, and may occupy, indifferently, all parts of the epigastric region. 3^d, There are several respects in which the fluctuation that accompanies the two kinds of swelling differs. (a) In distention of the gall-bladder, the fluctuation appears suddenly; in hepatic abscess, very slowly; in the latter case, it is suspected long before it is ascertained; in the former, most generally, it presents itself before its existence has been suspected. (b) From the earliest period that the fluctuation of the distended gall-bladder appears, its existence is unequivocal; whilst the fluctuation of abscess, particularly at its commencement, is a matter of much uncertainty. (c) The fluctuation of the abscess is, at first, apparent only in the centre of the tumour, and in proportion as the suppuration increases, it extends to the circumference; whilst the fluctuation of the distended gall-bladder is, from the first day, almost as manifest at the circumference as at the centre. 4th, and lastly, To whatever extent the suppuration may proceed in abscess of the liver, its circumference is always hard and swelled; the distended gall-bladder, on the contrary, after the subsidence of inflammation, is not in general surrounded with any degree of hardness or swelling.

313. When a tumour results from the projection of a serous or hydatid sac upon the surface of the liver, it usually elevates a portion of the abdominal parietes, so as to be perceptible on simple inspection. The great degree of resistance, and the great elasticity of the swelling, combined with those other circumstances that imply its connection with the liver, may lead to the detection of the nature of a tumour of this kind.

314. M. Piorry alleges, that, when a hydatid cyst is percussed, either directly or with the plessimeter, it emits a very peculiar sensation, which he designates hydatid *fremissement*, or quivering. He describes it as consisting in a vibration or oscillation, very analogous to those produced on the percussing finger by the *timbre* of a repeating watch, or by a chair containing elastic springs; and he holds that this phenomenon, when it is very manifest, is a positive sign of the presence of numerous hydatids in a common cyst.

DISCRIMINATION OF SOLID TUMOURS.

315. During life, the different diseases of the liver, capable of

producing solid swelling, may, under favourable circumstances, be, in some measure, discriminated from one another, by the degree of smoothness, roughness, or more prominent inequality, which the surface of the swelling may present. In enlargement from congestion or inflammation, the surface will be smooth, without prominences or depressions. In tubercular enlargement, it is liable to present numerous inequalities, in consequence of unequal development of its several parts. In enlargement from cancerous masses, numerous prominences raising the parietes of the abdomen may be felt; but when softening occurs in these masses, says M. Andral, each elevation is succeeded by a depression. We shall be assisted, likewise, in judging of the nature of the morbid condition of the liver upon which the swelling depends, by the permanence which it exhibits. When, for example, the swelling comes and goes in a sudden manner, we may infer that it depends upon congestion.

316. But in laying down these general rules relative to the possibility of ascertaining the particular nature of a disease seated in the biliary organs, from an examination of any tumour or swelling to which it may give rise, it must be borne in mind that the absence of swelling in the hepatic region, cannot be regarded as affording in itself a sufficient proof of the non-existence of any one of the diseases to which the liver is subject; for all the affections of that organ, as M. Andral has remarked, may pass through the successive periods of commencement and increase, without the organ enlarging to such a degree as to produce apparent swelling. And even when enlargement actually exists, we may be unable, in particular circumstances, to satisfy ourselves of the fact by inspection on manual examination. This is particularly the case when a considerable effusion of fluid has taken place into the cavity of the peritoneum, or when the large intestine has undergone considerable distention by an accumulation either of fæces or of wind. The operation of paracentesis in the one case, and the evacuation of the bowels in the other, may bring to light enlargement of the liver, of the existence of which no positive proof could previously be obtained.

317. It is represented by the advocates of percussion (see Piorry, *Diagnostic*, ii. 216) as one of the superior advantages which this method of investigation possesses over simple palpation, that, in most cases, effusions of fluids into the abdomen do not prevent us from measuring exactly, by mediate percussion, the size and the situation of the liver. The sound emitted by the peritoneal fluid is less dull than that of the liver, and is most distinguishable from it over the parts which are least dependent, and where intestines swim in the midst of the effusion. If we wish to judge of the size of the liver in ascites, we must make the patient lie first on one side, and afterwards on the other; and study attentively, in these two different positions, the seat and the extent of the liver, and of the effusions, respectively.

SECTION III.

OF THE STATE OF THE SKIN, CONSIDERED AS A SYMPTOM OF DISEASES OF THE BILIARY ORGANS.

YELLOWNESS OF THE SURFACE.

318. As one of the most frequent and prominent symptoms of diseases of the biliary organs, may be mentioned that of yellowness of the surface of the body, or jaundice — as it is usually termed, depending on a deposition of biliary matter from the circulating blood. Though, for obvious reasons, this yellowness is most apparent in the skin, it is not confined to it alone, but pervades all the different tissues of the body.

319. It has been believed by some pathologists, that a general yellow suffusion of the skin may be produced by a cause or causes different from the deposition of bile, — as by some process of decomposition going on in the red globules of the blood, or by their finding their way into the smaller order of vessels, &c.; and, in particular, such explanations have been proposed of the yellowness accompanying certain forms of fever; of that which has been observed to ensue from the bite of the viper, and of some other venomous animals; of that occasioned by the eating of some species of mushrooms in Europe, and of certain poisonous fishes in the East and West Indies, &c.; and also of that which is very liable to occur in new-born children, constituting the *Icterus neonatorum* of systematic authors. But, without inquiring into the reasons which have led to the denial of all or any of these forms of yellowness on the surface of the body being attributable to bile, we shall proceed to consider the symptom of jaundice as allowed to depend on the presence of bile in the different fluids and textures of the body.

320. We have already seen (11, 56), that there are two principal circumstances under which jaundice seems to arise; 1st, When bile is not secreted by the liver at all, or is secreted in deficient quantity; and, 2^d, When the bile, though secreted, is unable to effect its passage into the intestinal canal, and, accumulating in the gall-ducts, either finds its way backwards, — regurgitates, as is said, — through the secreting apparatus into the venous system, as some suppose, or is taken up again, as others imagine, by the process of absorption. It is conceived by some pathologists, that a third circumstance under which jaundice may arise, is the absorption of bile from the alimentary canal, after it has been discharged into it by the gall-ducts.

321. In some of the cases in which pathologists have been led to believe that the occurrence of jaundice depended on the non-

secretion of the bile, rather than on its re-absorption, there has been obvious structural alteration; whilst, in others, from the absence of any such alteration, it has been necessary to attribute the disordered function to simple dynamical derangement. It is equally true with respect to jaundice depending on non-excretion of the bile, that it may be caused by obstruction either of a dynamical or of a structural character. Under the *dynamical* causes of biliary obstruction, may be included spasm of the gall-ducts or duodenum, and an inspissated state of bile. The *structural* causes are more numerous, consisting, in some cases, of morbid conditions of the ducts themselves; in others, of the liver; and in others, again, of some neighbouring organ. The several diseases of the *ducts* themselves, which may obstruct the flow of bile into the duodenum, have been already considered (135, seq. q.), such as inflammation of their lining membrane, with various consequences resulting from this, as thickening, constriction, &c.; enlargement of glands in their coats; the presence of gall-stones, &c. The diseases of the *liver* itself which create jaundice by producing non-excretion, are principally those in which tumours of considerable dimensions form, that press upon the hepatic or the choledoch duct. And, lastly, among the diseases of *neighbouring organs* giving rise to the same effect of obstructed biliary excretion, may be mentioned tumours of the spleen, the pancreas, the stomach, the duodenum, or even, as has been alleged, a collection of scybalous matter in the intestines. A case of aneurism of the hepatic artery, described by Dr. Stokes, which proved the cause of obstinate jaundice, may here also be referred to. (Dubl. Med. Journ. 1834, No. xv.) In employing yellowness of the skin as a diagnostic symptom, therefore, it is necessary to keep in mind, 1st, That it may arise from morbid conditions of other organs than the liver; and, 2d, That the conditions of the liver capable of producing it are exceedingly various.

322. We propose now to consider what assistance can be derived,—in attempting, in particular instances, to determine on what pathological condition jaundice depends,—from the peculiar characters of this symptom, particularly as respects its shade or hue, and its continuance, these being the two circumstances which seem likely to throw some light, if not on the nature of the disease occasioning it, at least upon the intensity of the malady.

323. We are indebted to Dr. Bright (Guy's Hosp. Rep. i. 604) for the most accurate observations which we possess as to the variations in shade or hue which the colour of the skin presents, according to the morbid condition upon which the jaundice depends.

324. When jaundice arises from sanguineous *congestion*, in which the viscera of the thorax participate, the countenance gradually assumes a dingy aspect, in which the purple suffusion of carbonised blood is mingled with the yellow tint of a slight jaundice; the conjunctiva is more decidedly tinged: and, if the

disease continue long, the jaundice sometimes completely prevails over the purple tint.

325. The appearance of the skin termed black jaundice was connected by Dr. Leake (*On diseases of the Viscera*, p. 274), with a putrid dissolution of the blood. — “What is called the black jaundice,” says he, “is not a distinct malady, but only an inveterate state of one and the same disease, attended with a bloated habit, and change of complexion to a livid hue, from the extravasation of dissolved putrid juices into the cellular membrane, which will be most apparent on the surface of the body, under the eyes, and on the temples, where the skin is thin and the circulation most languid.”

326. When the jaundice depends on *obstruction of bile in the ducts*, particularly the larger ones (as from gall-stones), the skin usually displays a very vivid colour, which comes on suddenly or more gradually, and continues longer or shorter, according to the nature of the obstructing cause. This vivid colour may cease altogether, or continue till death takes place at no very distant period; or it may pass gradually into a dingy green colour, giving the countenance a mulatto appearance, that may be designated as black jaundice. When the obstruction of the ducts depends upon organic lesion, the countenance generally becomes gradually suffused with bile; at length, the more decided jaundice takes place, and this goes on increasing in intensity for a time, after which the colour loses its brilliancy, and assumes a dard dusky-green hue, and squalid appearance, which is one of the worst symptoms.

327. According to Mr. Annesley, deep green, or even olive-coloured jaundice, which has been commonly called black jaundice, and is comparatively rarely met with, is only found attendant upon cases in which there occur great congestion of the liver, accumulations of black viscid bile in the liver and gall-bladder, and complete obstruction of the ducts. (i. 480.)

328. In jaundice from *chronic change in the structure of the liver*, the change from the natural colour is usually gradual and inconstant; and the yellow tinge of the conjunctiva often precedes, for some weeks, any more decided indication. In time, however, preceded by a bronzed appearance of the forehead, or the darkened areola of the eye, a jaundice bearing the lighter tints, from a sallow suffusion to a fainter or more decided lemon hue, still, however, liable to considerable fluctuation, establishes itself over the whole body.

329. In jaundice from *inflammatory action of the liver*, in a day or two after the early symptoms have appeared, the conjunctiva becomes tinged, and, in a few days more, there is universal bright brilliant suffusion of the skin. In the severer cases, a jaundice of the most intense colour is diffused over the whole surface. If the disease does not prove fatal at the early period, but goes on for some weeks, the skin assumes a light lemon coloured tint, bespeaking, as says Dr. Bright, a very general disorganisation of the liver.

330. In respect of this last form of jaundice, the inflammatory, it is proper to quote here the observation of Mr. Annesley, who says; "A certain degree of jaundice is often remarked in the hepatitis of Europe, especially when it terminates in abscess; but jaundice is not a frequent concomitant of hepatitis in India, unless when the ducts or gall-bladder become involved in the disease, or when it supervenes to biliary calculi or obstruction of the ducts." Dr. Malcolmson also observes, that "in many cases of suppuration in the substance of the liver, the skin is hardly or not at all tinged with bile. Saunders and other writers," he adds, "lay too much stress on this symptom." "All inflammations of the liver," observes M. Portal (p. 138), "are not followed by jaundice. It is, no doubt, in those cases in which the inflammation is seated in parts of this viscus, remote from the excretory biliary-ducts, that jaundice does not occur."

331. It is obvious that of the various pathological conditions capable of producing jaundice, some are more or less transient, while others are permanent in their nature. To the former class belong the dynamical affections and the simple circulatory derangements, and to the latter, a large proportion, if not the whole, of the structural alterations. In proportion, therefore, to the continuance of an attack of jaundice, is the probability of its depending upon a structural morbid condition. In some instances, the morbid condition, producing jaundice, is such as to disappear and reappear repeatedly within short spaces of time, as in spasm of the ducts, or in gall-stone moving backwards or forwards in these canals; and, in such cases, the jaundice may assume what may be called an intermittent or remittent form. Some very singular cases have been recorded in which jaundice has assumed a periodical type, and in some of these the intervals between the paroxysms has been of considerable duration. Mongellaz has quoted from Strack a case of febrile jaundice of a tertian type, and refers to others by the same author; from Mittlehauser, he quotes a case of jaundice of a quintan type; from Schuster and Bianchi, cases of mensual jaundice occurring in women; and from Martinet, a case of mensual and sexmensual hepatitis and jaundice.

ITCHINESS.

332. There is frequently experienced in the jaundice, a very troublesome sense of general itching over the skin. Dr. Heberden, who says that this itching is unaccompanied with any eruption, observes (Commentaries, p. 245), that it "is supposed to be owing to the irritation of the skin, from the acrimony of the bile mixed with the blood; but it is not easy to say why this or any other cause should make this complaint so exceedingly distressful to some, whilst it is not at all felt by others. According to Dr. Powell (p. 85), the itching of jaundice is attended by some elevation of points, which, in the recourse that is had to scratching

for relief, are more readily broken than the surrounding plain, and form coagulated scabs, with a trifling surrounding inflammation. The pruriginous affection liable to occur in diseases of the liver, is, indeed, sometimes a source of great annoyance to the patient.

PALENESS OF THE SURFACE.

333. "Will the colour of the skin," asks Dr. Pemberton, "afford us any assistance in conjecturing about the nature of a chronically diseased liver?" (P. 41, note.) Dr. Addison has called attention (Guy's Hosp. Rep. i. 479) to a state of the integuments, earliest observable, as well as most conspicuous, in those of the face and of the backs of the hands, but liable to pervade the whole surface of the body, which, he thinks, is indicative, if not pathognomic, of fatty degeneration of the liver. To the eye, the skin presents a bloodless, almost semitransparent appearance, more resembling ivory or wax, according as there is a predominance of pallor or of sallowness. To the touch, the integuments feel loose, smooth, and even flabby; and in the greatest intensity of the affection, convey a sensation resembling that experienced on handling a piece of the softest satin. Is it to the same conditions of the liver and of the integuments that Dr. Pemberton alludes, when he mentions that in two cases of enlarged liver, perfectly cream-coloured, both on its surface and through its substance, the face and the whole of the skin of the patients, during the illness, were of the same pale colour?

SECTION IV.

OF MORBID AFFECTIONS OF THE ALIMENTARY CANAL CONSIDERED AS SYMPTOMS OF DISEASES OF THE BILIARY ORGANS.

334. In the progress of the various diseases of the biliary organs, dynamical or structural, different morbid affections of the alimentary canal are liable to supervene. Some of these may be regarded as merely symptoms of the primary hepatic disease, of the existence of which indeed they sometimes afford the first, or, at least, the most certain indication; while others constitute, in themselves, secondary diseases, possibly of a dangerous character, and requiring, to a certain extent, an independent mode of treatment. Thus, in various hepatic diseases, the *stomach* may be affected with occasional nausea and vomiting, in greater or less degrees; or its disorder may amount to the state of permanent dyspepsia. In like

manner, the *intestinal canal* may be variously affected in the progress of these diseases; its secretions may assume a morbid character, giving rise to corresponding changes in the characters of the alvine evacuations; or its mucous membrane, in whole or in part, may become affected with inflammation; or its peristaltic action may cease, or be quickened, or become inverted. Hence cholera, diarrhœa, dysentery, colic, and ileus, may be respectively considered as occasional terminations or complications of the diseases of the biliary organs.

335. Morbid conditions of the biliary organs may be supposed to affect the alimentary canal in several different ways; 1st, by some change in respect of the quantity or quality of the bile which they discharge into it; 2d, by an extension of disease, dynamical, as in the case of spasm, or structural, as in the case of inflammation, cancer, &c.; and, 3d, by mechanical compression.

336. Under a variety of circumstances the bile regurgitates from the duodenum into the *stomach*, producing sensations of nausea, and ultimately occasioning vomiting. In this manner, the bile is rejected, either mixed with articles of food recently taken, or with the gastric secretions, or, in some instances, nearly pure. The antiperistaltic action of the duodenum, producing the anormal course of the bile, in these instances, may be supposed to depend on the quantity of this fluid which is discharged into it, or on its quality; or to occur from causes independent of any morbid condition of the bile.

337. In certain forms of disease, as yellow fever, cancer of the stomach, &c., dark coloured matters are liable to be vomited, which were long supposed to be products of a morbid secretion of the liver, or of a morbid change in the bile. It is now, however, understood, that in a large proportion of instances, at least, the matter ejected in what is called black vomit, is blood that has transuded from the vessels of the stomach into the cavity of that viscus, and which either possessed the qualities which it exhibits, at the time of its transudation, or has subsequently acquired them from the action of some of the contents of the stomach upon it.

338. Biliary concretions are said to have occasionally made their way into the stomach, and have been rejected from it by vomiting.

339. Nausea and vomiting, independently of being produced by the regurgitation of bile, are liable to be induced in cases of enlargement of the liver, by the compression to which the stomach is thereby subjected.

340. The quantity and quality of the bile that is discharged into the *intestinal tube*, and the changes which it there experiences from the agency of other substances, necessarily modify, to a considerable degree, the appearances of the *alvine evacuations*. We shall, in the first place, notice the characters which these evacuations assume, when the bile is not secreted at all, or when, being secreted, it is prevented from reaching the duodenum.

341. "It is generally stated, and as generally believed," re-

marks Dr. Powell (p. 85), "that costiveness is a necessary consequence of a want of bile in the intestines, and from this circumstance it has been asserted that the great use of the bile is to stimulate the intestines. If the position was founded in fact, the inference would be just, but, I think, this will admit of doubt. In truth, with the greater number of patients I have seen, the contrary has been the case, they have been rather purged than otherwise; and most of the clay-coloured stools of this disease, at which I have looked, have been remarkably soft in their consistence." Dr. Heberden, as Dr. Powell candidly acknowledges, had previously made a similar remark. "It might naturally be expected," says that accurate observer, "that the want of irritation from the bile should make icteric patients costive: but in fact they are often disposed to have a purging. Certainly neither of these states is peculiar to their distemper; and the spontaneous diarrhœa, or the readiness with which a costiveness is removed, may help to distinguish it from the ileus." (Comment. p. 246.)

342. If the non-secretion, or the non-excretion of the bile be complete, it is obvious that the fæces must be destitute of that colour which they are wont to receive from the intermixture of this substance; and if it be incomplete, their shade of colour must vary according to the quantity of bile which enters the duodenum, and is incorporated with them. Is the appearance of the alvine evacuations calculated to afford us any assistance in judging, in a particular case of jaundice, as to the nature of the internal morbid condition upon which it depends? On this point, again, we may adduce the observations of Dr. Bright, which seem much more precise than those of any other practical author with whose writings we are acquainted. (Guy's Hosp. Rep. i.)

343. In jaundice depending on *venous congestion*, the dejections are not obviously deficient in bile.

344. In jaundice from the *obstruction of concretions* the stools become of a pale drab colour; and in that from the obstruction of *organic deposit*, they are of the lightest drab colour, approaching to white.

345. In jaundice from *chronic change of the liver*, the alvine evacuations seldom present that marked deficiency of bile which is observable in some other cases; on the contrary, they vary through the different shades of brown and yellow; and are often remarkable rather for the unequal manner in which the bile is mingled, than for the absence of the secretion. The action of the bowels is generally irregular; and as the disease advances, evacuations of blood frequently take place.

346. In jaundice from *inflammatory affection of the liver*, the stools are, both in the more and in the less acute cases, of a light colour; but less decidedly so, and subject to greater variations, than when the obstruction is mechanical; and occasionally, after a few days, they give little evidence of deficiency of bile.

347. That there should exist bilious yellowness of the skin in a particular case, and yet the patient's dejections exhibit their usual

colour, implies, in the *first* place, that the internal affection is not of such a nature, or to such a degree, as to prevent the whole or a part of the secreted bile from passing into the duodenum. This, from Dr. Bright's statement, would appear to be the case in venous congestions; and to a greater or less degree, in the inflammatory and chronic affections of the liver. And even when there is a stone in the hepatic or choledoch duct, if it does not so exactly fill the canal but that some bile passes by, either from the natural impelling powers, or from being squeezed through by the violent vomitings which are liable to occur, the stools, as Dr. Coe remarks (p. 154) may be tinged yellow. But, in the *second* place, does not the simultaneous existence of jaundice, and of a natural colour of the stools, seem to imply, as already hinted, the existence, in the blood, of an excess of the biliary principles, whether that the liver is incapable of removing the whole by the secretory process, or that, the quantity secreted being excessive, the excess is reabsorbed into the sanguiferous system?

348. We may, in the second place, notice those modifications in the appearance of the alvine evacuations which have been conceived to depend on an excess of the biliary secretion.

349. That an excess of the biliary secretion, combined with a more or less considerable degree of acrimony of that fluid, is the immediate cause of cholera and of bilious diarrhœa, and is manifested by the appearance of the evacuations in these diseases is an opinion which has been very generally recognised. (See Cullen's *First Lines*, § 1453-4, and § 1480.) But, of late years, pathologists seem to have begun to suspect that the doctrine had been established on insufficient grounds. Dr. Abercrombie's observations on this point were formerly quoted (21). But, in addition to his own testimony, Dr. A. refers to a late intelligent writer on the diseases of India (Mr. Tytler, *Calcutta Transactions*, III.), as expressing himself in the following manner, relative to the doctrine entertained by several systematic writers, that bilious diarrhœa arises from increased secretion of bile. "Not a single fact is produced by these authors in support of their opinion, and it seems to rest merely upon the popular notion that the colour of the fæces is derived from the bile; but this doctrine seems rather to be taken for granted than proved." Dr. Holland, in his reflections on some points of the pathology of the colon (*Medical Notes and Reflections*,* Chap. xiii.), seems to adopt similar views. "It cannot be doubted," says he, "that many of the various egesta from the bowels usually termed bilious, and treated as such, have no other relation to bile than that of mere admixture. They are separated from the vessels or glands of the larger intestines by exudation or secretion; and act upon the contents of the bowels, as well as upon the living parts of the system, according as they deviate in quantity or quality from the healthy state."

350. In the third place, some of the appearances of discoloration

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exhibited by the alvine evacuations have been supposed to be attributable, not to simple deficiency or excess of bile, but to vitiations in its qualities. Such, in particular, used to be the explanation given of the dark or black appearance which the stools occasionally present, assimilating them to ink or pitch, and to which the name of *melæna* has been applied. It is now, however, well understood that, in a large proportion of cases at least, this condition of the stools is caused, not by bile, but by a morbid secretion or exudation from the internal surface of the alimentary canal, and is consequently to be regarded as *primarily* a symptom of disease of that surface, rather than of derangement or disease of the biliary organs. Mr. Abernethy, who certainly was in no degree disposed to under-estimate the importance of biliary derangements in the production of morbid phenomena, acknowledged that "there is great reason for ascribing the discharges in the disease called *melæna*, to a vitiated secretion from the surface of the alimentary canal;" and that "it seems probable that the stools which resemble pitch, are principally composed of diseased secretions from the internal surface of the intestines, since they do not seem either like the residue of the food, or like discharges from the liver." The liability of such discharges to be mistaken for vitiated bile must, no doubt, be increased by the fact that they are particularly liable to occur in diseases of the liver. "I have had frequent opportunity," says Mr. Langstaff, "of remarking the morbid sympathy that exists between the liver and large intestines, when the former is diseased or disordered: the mucous glands of the latter secreting a ropy blackish mucus, sometimes mixed with blood, which is frequently discharged by stool, and induces many persons, who have not had the opportunity of correcting their judgment by the inspection of dead bodies, to suppose that such discharges proceed originally from the liver." (Med. Chir. Trans. viii. 292.)

351. From the appearances, however, which the bile occasionally exhibits in the gall-bladder, it seems not unreasonable to suppose that, in some instances at least, inky or pitchy stools may derive their characters from that fluid. Mr. Marshall, on whose accuracy of observation we place much reliance, states that he has seen considerable quantities of black pitchy bile passed by stool, seemingly unmixed with any other substance. "The stools," he adds, "had no particular smell, and in every respect resembled the thick black bile as it is frequently found in the gall-bladder." It would be proper, in cases of this kind, to ascertain the effect on the stools of dilution with water; for if their black colour be dependent on inspissated bile, it will, by such dilution, be changed to yellow. "*Sanguis utut ater,*" says Lorry in his *Treatise de Melancholia*, "*si copiose diluatur, si linteo imprimatur, obscure semper rubescit: nullatenus vero melancholia (s. atra bilis) quæ diluta flavescit, et in varias partes secedit, flavamque diluta linteo maculam imprimit.*"

352. Another appearance, not unfrequently presented by the alvine evacuations, and likewise supposed to depend on some par-

ticular condition of the bile, is that usually designated as *green* or *greenish stools*. That the green colour of such evacuations does not belong to the bile as originally secreted, but is acquired by it subsequently to its entrance into the alimentary canal, has been taught by several writers on bilious affections. "From the effects of various acids upon bile out of the body," says Dr. Powell, (p. 148-9,) "in producing a green colour of it, and from the similar appearance which is often found in the fæces, we are led to suppose that the same cause produces the effect in either instance. I have added the gastric acid to yellow bile, with a view to these effects, and have found the green muddy colour, and flocculent precipitation of the serous part, to follow in the same way as when other acids were used. This green appearance, then, is to be considered as a morbid alteration produced in the bile, by the application of an extraneous matter, after it has left its secreting organ; and nurses are well aware of the several appearances connected with it, from observing the stools of young children." Mr. Marshall, also, in noticing that thick black bile, diluted with vinegar, forms a dark green substance, resembling chopped spinach, adds: "Alvine evacuations, similar to this substance, are sometimes passed; which is probably occasioned by a combination of acid and black bile in the common track of the intestines."

353. Notwithstanding this coincidence of opinion, however, the origin of green stools is a subject which still requires more full investigation than it has received; and more than one practical writer might be referred to who is disposed to regard such evacuations as the effect of morbid secretion from the intestinal canal, rather than of vitiated bile, or of any intermixture of bile with other fluids in the bowels. The anonymous author of an excellent article on the effects of calomel in producing slimy stools in children (Lond. Med. and Surg. Journ. ii. 344), says: "I do not believe that the bile had much to do, in general, in producing the green and slimy stools of children. I have examined many bodies in which the lower part of the intestinal canal was found to contain a great quantity of green slimy matter, but where its contents were of the natural colour towards the upper part; I have also noticed the colour of the bile in the gall-bladder to be natural, in bodies where the contents of the bowels were perfectly unhealthy in appearance. There does not, therefore, appear to be sufficient reason for attributing the green or dirty colour of the stools, observed almost invariably in the diseases of children, to a morbid alteration of the bile, or to a superabundance of it." Dr. Holland, in observing that the peculiar matter resembling coffee grounds, which sometimes comes away in such large quantity from the bowels, is often described as disordered bile, though he believes it to be separated, in great part, in the lower intestines, adds: "Those secretions, also, which resemble chopped grass or spinach, have probably the same origin; and even of the liquid which is called green bile, it is doubtful what proportion may come from the liver."

354. The influence of calomel in producing green stools, when administered to children on account of cerebral affections, of which the green stools are often regarded as a symptom, seems to us well deserving of investigation. We have seen, in cases of this kind, the evacuations changed by a single dose of calomel, from a bright yellow to spinach-green.

355. May *white stools* occur in cases in which there is no jaundice, and, if so, how can this phenomenon be accounted for? The only explanation which it seems possible to give of the occurrence is, that the blood is deficient in the appropriate elements of the biliary principles, and that any fluid which the liver secretes, is, consequently, deficient in these principles; for, if the want of the due constitution of the bile depended, not on deficiency of proper materials in the blood, but simply on the liver not being capable of separating them from that fluid, jaundice must arise from their retention, as in the class of cases already referred to (11).

356. Besides the occurrence of white stools without jaundice, depending on what Dr. Coe terms "such a degeneracy of the bile that it has lost its yellowness, and, therefore, cannot tinge the stools, if it does pass the duct, or the skin and the urine, if it regurgitates into the blood," that author alleges that the same phenomenon may arise from the bile being detained in the gall-bladder, after its secretion, either from such a state of the coats of the bladder that all its pores and vessels are stopped up, as well as the ducts; or from such a viscosity of the bile that it cannot make its way into the blood any more than through the duct; and he refers to the case of large distention of the gall-bladder related by Mr. Gibson in the *Edinburgh Medical Essays* (ii. 352), as one in which the stools were white without any other signs of jaundice presenting themselves.

357. The alvine evacuations are liable, in certain diseases of the liver, to experience other modifications besides those which depend on variations in the quantity and qualities of the bile, that may assist in leading the practitioner to a knowledge of the existence of the disease, and of its particular nature.

358. We have seen, in regard both to abscesses (93) and to hydatid cysts in the liver (121), that in a considerable proportion of the cases, in which they experience perforation, they discharge their contents into the intestinal canal. These matters, will, of course, in such cases, appear in the alvine evacuations, and, if other symptoms of hepatic disease exist, will enable us to decide as to its nature; otherwise, we may be left in uncertainty as to the quarter from which the pus or the hydatids have proceeded.

359. That, subsequently to the formation of an abscess in the liver, its purulent contents may be absorbed, and in finding their way, by some channel, to the mucous surface of the intestinal canal, may be poured into that canal and discharged by stool, is an opinion which has been long entertained, and in support of which numerous cases have been recorded. It may, however,

admit of doubt whether, in some of the cases that have been explained on this principle, a communication may not have been established between the abscess and the biliary passages, so as to allow of the pus being conveyed through the gall-ducts into the duodenum. And it may also admit of doubt whether in some of these cases, as in one related by Dr. Conwell (case 224), the purulent or puriform fluid observed in the stools, may not have proceeded from the inner surface of the bowels. Dr. Malcolmson says that shivering, evening fever, emaciation, tumefaction of the side, and puriform discharges from the intestine, not unfrequently take place where there is no formation whatsoever of matter in the liver; and that in many cases which are supposed to have recovered from abscess, it had evidently never existed.

360. When biliary concretions find their way into the intestinal canal, either along the gall-ducts, or by preternatural passages, they are, in a large proportion of cases, speedily discharged with the alvine evacuations. It is obviously only in those cases in which the passage of the concretions, through the biliary ducts, or along the intestinal canal, has occasioned morbid phenomena, that the evacuations will be examined with a view to their discovery. In general, therefore, the concretions found in the alvine evacuations have been of large dimensions.

361. Cases occasionally occur in which all the symptoms of *ileus* manifest themselves, and in which the abatement or cessation of these symptoms, when a favourable termination occurs, is simultaneous with, or shortly succeeded by, the discharge of a gall-stone from the intestinal canal. How does the gall-stone operate, in cases of this kind, in producing the *ileus*? and, in particular, is it during the passage of the gall-stone along the ducts, or subsequently to its entrance into the alimentary canal, that it exerts this operation? or may a gall-stone in either of these situations produce the same effect? Certain it is, that, of the cases in which *ileus* from gall-stone has proved fatal, in some it has been found, on examination after death, that there was a body of this kind in the gall-ducts, and not in the intestinal canal (Abercrombie, p. 363); and in others, in the intestinal canal, and not in the ducts (Abercrombie, p. 125, and Reynaud). And, in a remarkable case of *ileus* terminating fatally, quoted by Cruveilhier from M. Monod (Livr. xii. Pl. 4, 5), whilst one calculus was found in the jejunum (above which, as far as the lower half of the œsophagus, the alimentary canal was distended with a brownish-yellow fluid), another gall-stone was sticking in an ulcerated communication between the gall-bladder and duodenum; and there were other morbid appearances which Cruveilhier thinks, without, as it appears to us, very sufficient grounds, more likely than the gall-stone in the jejunum, to have produced the *ileus*. In a case of unusually large gall-stone discharged by stool, after a very alarming attack of iliac passion, Dr. Craigie was strongly impressed with the belief that the concretion produced this effect

during its passage through the cystic and common ducts. (Edin. Med. and Surg. Journ. xxii.)

362. It would appear, from a case related by Puy-Royer, that obstruction of the intestinal canal, giving rise to ileus, may depend, not on a single biliary calculus, but on an agglomeration of several. In the case in question, the cavity of the ileum was found to be exactly filled with agglomerated biliary calculi. They formed, by their union, a continuous cylinder, which separated, on drying, into several pieces. The gall-bladder contained many similar concretions, and one of them obstructed the lower extremity of the choledoch duct, which was dilated, above this, to an extraordinary degree.

363. The occasional supervention of hepatic affection in the progress of *dysentery* has been already noticed (234). But it has also been supposed that an opposite relation might subsist between these two affections, that the liver complaint might be primary, and the dysentery consecutive.

364. Respecting the connection between dysentery, — as it presents itself in India, or in other hot climates, — and hepatic affection, three different doctrines may be said to have been proposed. The first, That dysentery invariably has its origin in functional or structural disease of the liver; the second, That though in these, as in other countries, there is a form of dysentery independent of liver disease, there is another form which has its origin in functional or structural disease of that viscus, and which may, therefore, with propriety, be termed hepatic dysentery or flux; and the third, That when dysentery and hepatic affection co-exist, the co-existence is accidental; that it merely marks the influence of the same causes in inducing both forms of disease, and does not imply any dependence of the dysentery upon the hepatic affection.

365. The first of these opinions, which was advocated by Curtis, seems to be now very generally abandoned; and as to the second, it would not, we believe, be difficult to show that there is far from being a coincidence, among those who recognise a hepatic form of dysentery, with respect to the nature and characters of the disease which they so designate. The last opinion is probably that which rests on the most solid foundation. "As morbid states of the liver," says Mr. Marshall, "occur independently of dysentery, and dysentery uncombined with diseased liver, may we not suppose that the operation of the same remote and exciting causes which produce morbid affections of the liver, may likewise occasion inflammation of the villous coat of the intestines? However frequently inflammation of the large intestines is found combined with induration or abscess of the liver, it is difficult to conceive that the former disease can be related to the latter as cause to effect." (P. 178-9.)

366. M. Andral mentions, that he has sometimes seen diseases of the liver, which had advanced slowly without affecting the constitution in any considerable degree, and without being accom-

panied with any disturbance of the digestion, become complicated, in consequence of the supervention of gastro-intestinal inflammation, with all the symptoms of cholera morbus, such as very copious vomitings, very large alvine dejections, sudden chillings of the cutaneous surface, and fatal termination in two or three days. In such cases, on opening the body, there has been found a very bright injection of the greatest part of the gastro-intestinal mucous membrane, without any other alteration; so that the inflammation was more remarkable by its extent than by its intensity in the several points which it occupied.

367. The same author points out the supervention of *continued fever* as another mode in which chronic diseases of the liver are liable to terminate, but one likewise, as he conceives, implying the supervention of intestinal inflammation. He states that persons who, though they have long laboured under such diseases, are still far from being exhausted, may be suddenly seized with fever of this type; their tongue reddens, dries, and blackens; their abdomen becomes tympanitic; diarrhœa supervenes; they fall into a completely adynamic state, and sink rapidly. On opening their bodies, traces of acute inflammation are found in the abdominal canal: this sometimes appears to have been intense. The mucous membrane is very red, softened, ulcerated at several points, and the severity of the symptoms is in direct proportion to that of the lesions. Sometimes, on the contrary, the gastro-intestinal inflammation seems very slight; nothing is observed in the mucous membrane, or beneath it, but a vascular injection, of greater or less extent; but this inflammation supervenes in a person already exhausted by a chronic affection of an important organ; and, consequently, in conditions favourable to the development of a state of very great prostration, on the occurrence of any intermittent inflammation, however slight it may appear. "Under whatever form," concludes this accurate observer, "attacks of gastro-enteritis show themselves during the course of chronic affections of the liver, it is important to know that they are one of the frequent causes of premature death, in a great number of persons labouring under these affections." (*Clin. Med.* iv.)

368. Another mode of consecutive affection, connected with the abdominal cavity, by which some of the diseases of the biliary organs may come suddenly and unexpectedly to a fatal termination, is *peritonitis*, produced by the rupture of a bag or cyst, containing a natural or preternatural fluid,—as of the gall-bladder or ducts, or of an abscess or cyst in the liver,—and the consequent effusion of its fluid contents into the cavity of the peritoneum. The phenomena which indicate this event correspond with those observed in other effusions into the cavity of the peritoneum, as in cases of rupture or perforation of the stomach or intestinal canal; viz., violent pains of the abdomen, exceedingly augmented by pressure; nausea and vomiting; collapse of the countenance, of the animal powers, and the vital functions; a rapidly sinking pulse; a

cold, clammy state of the face and of the extremities ; terminating, after no very considerable period, in death.

369. There is a subject which, though more interesting perhaps in a physiological than in a diagnostic point of view, may here be briefly noticed, viz., the influence of those causes which prevent the mixture of the bile with the chyme in the duodenum, in impeding the general nutrition of the body, or, in other words, in producing emaciation. Sir Benjamin Brodie, conceiving his experiments (193) sufficient to prove that the office of the bile is to change the nutritious part of the chyme into chyle, and to separate from it the excrementitious matter, endeavoured to explain how it is that, if the bile be of so much importance in the animal economy, persons occasionally live for a considerable time, in whom the flow of bile into the duodenum is interrupted. "On this point," says he, "it may be remarked, *1st*, That it seldom happens that the obstruction of the choledoch duct from disease is so complete as to prevent the passage of the bile altogether ; and the circumstance of the evacuations being of a white colour, may prove the deficiency, but does not prove the total absence of bile. *2dly*, That in the very few authenticated cases which have occurred of total obliteration of the choledoch duct in the human subject, there has been, I believe, always extreme emaciation, showing that the function of nutrition was not properly performed. In my experiments, I found that the more fluid parts of the chyme had been absorbed, and probably this would have been sufficient to maintain life during a limited period of time." (P. 343.)

370. Pathological observations have also been adduced in support of the physiological doctrine, espoused by Tiedemann and Gmelin, that the bile has little to do in the process of chylicification. We are informed by Dr. Elliotson in his Physiology, that Dr. Blundell has notes of the cases of two infants four or five months old, in whom the hepatic ducts terminated blindly, so that no bile entered into the intestines, and the stools were white, like spermaceti, and the skin jaundiced. But the infants grew rapidly, and thrived tolerably, notwithstanding. He therefore saw, adds Dr. Elliotson, that nourishment could be accomplished without the mixture of bile and chyme. Drs. Graves and Stokes allude to two cases of intense and long continued jaundice, in which, after the first attack of the disease, the derangement of the digestive organs subsided, the appetite returned, the bowels became regular, although the stools did not contain a particle of bile, and nutrition continued unimpaired, although the disease had in one case lasted for eight months, and in the other for two years. These facts, they add, are strongly confirmatory of the opinion advanced by Tiedemann and Gmelin, that the bile is to be considered rather as an excrementitious fluid than as necessary for the process of digestion.

371. It seems, however, to be overlooked, in these references to the doctrine of Tiedemann and Gmelin, that, whilst those physio-

logists look upon the bile as in a great measure an excrementitious matter, they regard its secretion as tending principally to maintain the blood in such a state of combination as to enable it to serve for nutrition in the different organs. In either view of the case, therefore, as Dr. Cursham has justly remarked (*Lond. Med. Gaz.* 29th May, 1840), emaciation might be expected to result as the consequence of the bile not effecting its entrance into the intestinal canal; according to the one supposition, from imperfect chylification; according to the other, from an impure condition of the blood, rendering it unfit for nutrition. Both hypotheses agree as to the effect produced, though they differ as to the mode in which it is accomplished.

372. In a paper in the *Transactions of the Medical and Physical Society of Calcutta* (v. 195), Mr. Twining has related five cases of occlusion of the biliary ducts, seated, in one instance, in the hepatic, in another, in the common choledoch, and in the three others, in the cystic. In the case of occlusion of the hepatic duct, the patient was emaciated and pale, and in that of obliteration of the common choledoch duct, the patient was pale, emaciated, and miserable; whilst in the only one of the three cases of obliteration of the cystic duct, in which allusion is made to the patient's habit of body, he is stated to have been a stout and fat man. Other instances might be adduced, illustrative, if not of the influence of impediment to the flow of the bile into the intestinal canal, in producing emaciation, at least of the co-existence of these two conditions.

SECTION V.

OF THE CONDITION OF THE URINE, CONSIDERED AS A SYMPTOM OF DISEASES OF THE BILIARY ORGANS.

STATE OF THE URINE.

373. Next to the altered conditions of the alvine evacuations, we may notice those of the urinary secretion, which manifest themselves in the various forms of disease of the biliary organs.

374. In cases of jaundice, the urine is of a deep yellow colour; it may assume this colour previously to its manifesting itself on the skin, and may exhibit it even in cases of disease of the liver in which the skin preserves its natural appearance. We may consider this symptom, therefore, as a more delicate test of the existence of bile in the blood, than yellowness of the skin. The urine, in some cases of jaundice, becomes loaded with bile, till it assumes a colour deeper than porter, but of a green tint. Dr. Lombard states, that in the examination of jaundiced urine, he has almost always found it extremely acid. It powerfully reddened turnsol

paper, and the degree of acidity appeared to be connected with the intensity of the jaundice tinge.

375. It is proper to keep in remembrance, however, that the urine may exhibit a green tinge, independently of its containing bile. In various diseases connected with a deranged condition of the kidney, the red part of the blood, mingled with a smaller proportion of serum, finds its way into the urinary bladder, and becomes mixed with the urine. If there be only a small quantity of the colouring matter of the blood present, it may remain for a considerable time either in a state of solution, or of mere suspension, in the urine, without interfering with its transparency, but at the same time communicating to it a greenish tinge, so precisely like that produced by the colouring matter of bile, that it would be impossible to distinguish the one from the other by mere inspection. The addition, however, of muriatic or nitric acid to bilious urine causes, in most cases, after some time, a deposit of a green colour to take place; a circumstance not observable in urine impregnated with red particles of blood. (Brett, Lond. Med. Gaz. xvii. 896.)

376. Some experiments published in 1815 by Mr. Rose, surgeon at Bottesdale, and by the late Dr. Henry of Manchester (*Ann. of Philos.* v.), led to the conclusion that, in hepatitis, both of an acute and of a chronic character, the urine contains no urea, and that this might therefore be regarded as a diagnostic symptom of the disease. But the investigations of Dr. Prout* and of Dr. Davy† have tended to overthrow, rather than to confirm this belief. The former, indeed, professes himself disposed to assert that, generally, in this disease, there is an excess of urea in the urine, rather than a deficiency.

377. As, in cases of hepatic abscess or hydatid, a communication may be established with the urinary organs, it follows, that the contents of those cavities may be discharged through the urethra. And, it has been supposed, as already remarked (82), that, in cases in which the contents of an hepatic abscess have been re-absorbed into the system, the purulent matter may be, in whole or in part, eliminated from the system by the urinary passages, as well as by the alimentary. Of thirteen cases of purulent discharges in hepatic diseases related by Dr. Mouat in his first publication upon this subject (*Calcutta Quart. Med. Journ.*, July, 1837), in eleven pus was passed by urine, and in three of these, by this channel exclusively. According to Dr. Conwell, when a hepatic case begins to improve by this process of re-absorption, the urine first assumes the appearance of decoction of cinchona, and is more or less opaque and turbid; in a few days, it becomes quite opaque and white, as if blanched with cream or pus, and it is frequently stained more or less with bile.

* Inquiry into the Nature, &c. of Gravel. 1821. (P. 11.)

† Account of the Interior of Ceylon, 1821. (P. 490.)

SECTION VI.

OF MORBID CONDITIONS OF THE RESPIRATORY FUNCTION, CONSIDERED AS SYMPTOMS OF DISEASES OF THE BILIARY ORGANS.

378. Considering the position which the biliary organs occupy in relation to the cavity of the thorax, the share which the diaphragm has in the mechanism of respiration, and the yielding nature of that muscular and membranous partition, it is not surprising that various diseases of the liver and its appendages should be liable to occasion derangements in the exercise of the respiratory function.

379. Morbid conditions of the biliary organs may be supposed to affect the exercise of the respiratory function, 1st, By compression, in consequence of their enlargement; 2d, By dragging down the diaphragm, in consequence of their increased weight; 3d, By the propagation of disease, particularly of inflammation, from the biliary to the respiratory organs; 4th, By the escape of a fluid, natural or preternatural, generated in the biliary organs, into the cavity of the pleura, or the substance of the lungs; and 5th, it is conceived, By nervous communications of the character usually termed Sympathetic, or by what is termed by some the Propagation of Irritation.

380. The principal deviations from the ordinary exercise of the respiratory function, arising, in one or other of these modes, from morbid conditions of the biliary organs, are, 1st, *Dyspnœa*, assuming, more or less, the character of asthma; 2d, Cough; and 3d, peculiar modifications of the Expectoration.

381. It is easy to perceive, that any considerable augmentation of the liver upwards must impede that flattening of the diaphragm on which inspiration so much depends, and that expansion of the pulmonary texture which follows as its consequence. The liver has often been observed so much enlarged, as to mount up to the third true rib, and to occupy almost all the space which should have been filled by the right lung. Nor is the injurious effect of this increased bulk confined to the one side alone; for, in consequence of the compression of the right lung, the blood is carried in excess to the left, producing there all the consequences of pulmonary sanguineous congestion. It is obvious, that the amount of difficulty of respiration will hold pace with the progress of hepatic enlargement; and that it will be particularly laborious when the patient lies on the left side.

382. Difficulty of breathing may arise as a consequence of hepatic inflammation. It is usually attended with pain in the chest, so as readily to lead to the belief that the lungs or the diaphragm are the seat of the disease, in cases in which it is proved, by post-

mortem examination, that the inflammation was confined exclusively to the liver. The difficulty of breathing, in such a case, is probably to be attributed to the pain excited by the motions of the diaphragm, which induces the patient, unconsciously, or nearly so, to transfer the performance of the respiratory movements to other parts. Dr. Nicoll states, that, according to his experience, when the respirations have been very quick throughout the course of hepatitis, there have always been extensive adhesions of the liver to the diaphragm; and that, when no adhesions, or scarcely any, existed, the breathing has been very little disturbed in any way, except in the very last stage of the disease.

383. M. Portal conceives that difficulty of breathing may arise from other morbid affections of the biliary organs, besides those hitherto referred to, particularly from biliary calculi retained in the gall-ducts and in the gall-bladder itself, from abscesses and ulcers in the liver, &c. He conceives also, that, besides these anatomical or organic causes of dyspnœa, there are others, not appreciable to the senses, but which are not less real, such as excessive sensibility of the nerves of the lungs, and irritability of the muscles of the chest, depending on various morbid conditions of the liver.

384. Hepatic cough, as it is termed, seems to manifest itself sometimes in cases of inflammatory affection of the liver, and sometimes in cases of disease, and particularly of enlargement of that organ, unattended by inflammation. Dr. Pemberton mentions (p. 20) that he never knew cough to occur as a symptom of acute hepatitis, till after the pain had seized the patient at least forty-eight hours, but that, after this period, it is a very common, and almost constant symptom. The cough, he remarks, is sometimes dry, and sometimes loose; *dry* when it arises from the inflamed membrane of the convex surface of the liver irritating the diaphragm; *loose* when it arises from the general inflammatory diathesis, producing an increased secretion from the mucous membrane of the lungs; that is, probably, when, either by extension from the liver, or by community of cause, bronchitis accompanies hepatitis. The occurrence of cough in cases of non-inflammatory enlargement of the liver has been accounted for on the supposition that the increased weight of the organ, by dragging down the diaphragm, stretches and irritates the respiratory nerves; and it has been supposed also that this influence of the enlarged liver over the respiratory organs may be exercised through the medium of the stomach, in cases in which the liver, by an increase of size transversely, or from one hypochondrium to the other, produces pressure upon that organ.*

* See, on this subject, a valuable paper in the Transactions of the Association of Physicians in Ireland (vol. iii. 245), by Dr. W. Brooke, entitled "A well-marked Case of Liver-Cough, with some Cases and Observations tending to show how frequently the Lungs, and other Viscera, sympathise with derangements in the Liver, whether organic or functional;" and in vol. iv., see sequel of the same case.

385. We have seen that, under particular circumstances, the contents of an hepatic abscess or hydatid cyst may find their way into the interior of the lungs, from whence they will be ejected by expectoration. (90, 121.) In the case of an abscess so discharged, it has been alleged that, in some instances at least, we may be assisted in determining the source of the purulent expectoration, by its being mixed with a larger or smaller quantity of bile. Dr. Abercrombie conceives this belief to be without foundation; for, says he, "as the abscess of the liver is generally lined by a cyst of coagulable lymph, it is cut off from any connection with the biliary ducts." (P. 334.) Whilst we admit the general accuracy of this statement, and, therefore, that bile is not to be looked for in all instances of expectorated hepatic abscess, it seems not difficult to conceive circumstances in which the biliary tubuli or ducts may discharge their contents more or less freely into the cavity of an abscess, as seems to have happened in two cases, mentioned by Mr. Curtis (p. 98), of abscess of the liver discharged through the lungs, "where the ulcer had extended deep, and eroded the gall-ducts, and much bile was brought up by coughing mixed with sanious matter, plainly distinguishable not only by the colour, but by the bitterness of taste." A mixed bilious matter was coughed up also in the two cases of hepatic abscess in which the liver and lungs communicated, that are mentioned by Sir James Macgrigor. And among the proofs of "the imperfect nature of the adhesive process in very many cases of abscess of the liver," Dr. Malcolmson adduces "the frequency with which the purulent matter, either in the cavity or when coughed up through the lung, is found mixed with bile;" and he mentions, that, in one case, he found that the matter of an hepatic abscess had passed into the gall-bladder, by means of one of the hepatic ducts which opened on the surface of the abscess.

386. It is more difficult to explain some cases that have been recorded, in which bile nearly, if not altogether, pure is said to have been expectorated. (See in the 1st volume of the Medical Commentaries, the "case of a woman who spat, from her lungs, a great quantity of pure bile, by the late Professor Simson of St. Andrews;" — in the 18th volume of the same work, "a curious case of expectoration of bile, by Dr. Gordon, physician in Aberdeen;" — and in the first volume of the Edinburgh Medical and Surgical Journal, a "case of hepatitis followed by bilious vomiting" (expectoration?) by the present Professor Monro.)

387. Cases have been related which would seem to show that the contents of an hepatic abscess may find their way to the inner surface of the bronchia, as well as to the kidneys and intestinal canal, by a process of metastasis or transference, no preternatural communication existing between the liver and the lungs.

SECTION VII.

OF DROPSY AND HEMORRHAGE AS SUPERVENING IN THE PROGRESS OF DISEASES OF THE BILIARY ORGANS.

DROPSY.

388. Several of the diseases of the liver are liable, in their progress, to be attended with ascites, caused in many cases, as there seems just reason to believe, by the obstruction which the morbid condition of the organ occasions to the flow of blood through the ramifications of the vena portarum; an obstruction which probably will not exist long without being followed by a diminution of the bloodvessels themselves.

389. In endeavouring to avail ourselves of ascites as a diagnostic symptom, the first question to be determined is, whether we have any means of distinguishing this effusion as occurring in consequence of disease of the liver, from effusion of the same nature when supervening to other diseases, as those of the heart, or of other abdominal viscera? In the latter class of cases, as the obstruction operates on the vessels of the *common* circulation, the dropsical effusion commences, at the extremities of these vessels, in the feet and ankles, and gradually extends along the legs and thighs to the cavity of the abdomen; whereas, in the diseases of the liver, as the obstruction affects the *portal* system, the effusion commences where the extremities of that system ramify, viz., within the cavity of the abdomen. From this explanation, however, it obviously follows, that if any tumour, whether belonging to the biliary organs or not, should press upon the trunk of the vena portæ, so as to impede its circulation, primary ascites will be produced equally as when the compression is exercised upon its various ramifications.

390. The second point which requires to be determined, relative to ascites as a diagnostic symptom in the diseases of the liver, is, which of these affections give rise to that state, and consequently are indicated by it? Now, in so far as the dropsical effusion depends on mechanical obstruction of the circulation, this is not a necessary nor frequent consequence of those diseases in which large circumscribed masses, solid or fluid, foreign to the structure of the liver, are formed, such as malignant growths, abscesses, or hydatids; for the influence of these, as Dr. Bright remarks (Reports, i. 107), as long as from their situation they make no immediate pressure on the large vessels, is often very small in favouring serous effusion. But it is those diseases of the liver in which its proper tissue undergoes, throughout its whole extent, condensation or induration, such as the various forms of tubercular degenera-

tion, that principally give rise to dropsy. Dr. Saunders pointed out what he called the scirrhus or indurated state of the liver as that which, by the impediment it occasions to the free passage of the blood through that organ, more particularly disposes to ascites. (P. 300–304.) M. Andral, in admitting ascites to be a common occurrence in the different forms of hepatic induration, insists particularly on its almost uniform existence in cases of diminished size or atrophy of the liver, of which indeed it may be the only discoverable symptom. Dr. Bright has described three morbid conditions of the liver, which he conceives to be distinct, and which all terminate in dropsical effusion into the cavity of the abdomen. (Reports of Medical Cases, i. 107.)

391. But though ascites accompanying hepatic disease seems, in a large proportion of cases, to depend on mechanical obstruction to the circulation, this is probably not universally its cause; for inflammatory affections of the liver may be supposed capable of inducing in the peritoneum, over a larger or smaller extent, the state which it has been proposed not inaptly to designate as hydrophlegmasia. Cruveilhier insists on the dependence of dropsy, as occurring in cancer of the liver, on the continual irritation of the peritoneum excited by the tumours.

HEMORRHAGE.

392. The same physical impediment to the free passage of the blood in the vena portarum, through the parenchyma of the liver, which in one case leads to dropsical, may, in another case, produce hemorrhagic effusion. But the liver, by its enlargement, may press upon, and cause impediment to the circulation through, venous trunks that form no part of its own constitution. The hemorrhages that occur in hepatic diseases, therefore, may or may not proceed immediately from the portal system.

393. From the earliest periods of medicine, the discharge of blood by the nostrils, or *epistaxis*, seems to have been regarded as frequently depending on affections of the liver and the spleen. In more recent times Dr. Donald Monro, in his "Account of the Diseases most frequent in the British Military Hospitals in Germany," in stating that the jaundice was very frequent, and in a manner epidemical, among the troops, for some time before they left the field, at the end of the campaign of 1760, observes, "several who had been reduced by fevers or other complaints, before the jaundice appeared, were attacked with violent hemorrhages from the nose; and two had like to have died of them before the bleeding was stopped. The hemorrhage did not prove critical, but seemed to depend on a dissolved state of the blood. It commonly stopped soon." M. Latour relates a case of nasal hemorrhage occurring in the last stage of jaundice (*Hist. &c. des Hemorrhagies*, obs. 902), and another of fatal issue, which was dependent on

obstruction of the liver (Obs. 745); and M. Lombard refers to the case of a young man who had been affected for six weeks with a jaundice that had resisted all the means of treatment employed against it, though it did not appear to be connected with organic disease of the liver, in whom there occurred frequent attacks of epistaxis attended with the loss of a great quantity of blood, in one of which the patient died, nothing being found capable of arresting the hemorrhage. (*Clin. Med. de l'Hop. de Genève.*)

394. The hemorrhage originating in hepatic affection, sometimes takes place from the lungs instead of from the nostrils. M. Barthez, in his *Nouv. Elm. de la Sci. de L'Homme* (ii. 58), makes particular reference to *hemoptysis* as being liable to occur as a consequence of obstruction of the liver. He rejects the explanation proposed by some of the older authors, of this species of hemoptysis being attributable to rupture of the veins of the liver, and conceives that it must be produced by a sympathetic correspondence of affection between the veins of the liver and those of the lungs, though of the primordial causes of this sympathy, he acknowledges we are entirely ignorant. There can be little doubt, however, that in most of the cases in which hemoptysis occurs as a consequence of hepatic affection, it is attributable to the pressure of the liver upwards, diminishing, as has been already shown (381), the amount of pulmonary substance through which the blood sent to the lungs is able to circulate.

395. In other instances the discharge of blood dependent on disease of the liver, takes place from the surface of the alimentary canal, whether of the stomach, producing hematemesis, or of the intestines, and is probably attributable to distention of the trunk and abdominal branches of the vena portæ. (Latour, Obs. 743, 746, and 744.) Dr. Law, from having found in a succession of cases of hematemesis dependent on disease of the liver, which proved fatal under his own observation, that that organ was in a granular condition, has been led to conceive that this is the only diseased state of the liver which gives rise to vomiting of blood. (Dubl. Med. Trans. i. 105.) This seems, however, to be too hasty a generalization.

396. In other instances again, the hemorrhage may take place simultaneously from the mucous lining of the air passages and of the alimentary canal. Dr. Heberden mentions, that in the advanced state of what he calls inflammatory scirrhi of the liver, "the blood will gush out in great quantities from the nose, the gums, the stomach, the navel, and with the stools; which is probably," says he, "to be attributed to the obstruction which it meets with in the scirrhus liver;" and Mr. Langstaff states, that he has noticed that, in most organic affections of the liver, nasal, stomachic, or intestinal hemorrhages are not unfrequent occurrences, which he supposes may be considered to arise from excessive determination of the blood to the mucous surfaces of those

parts, and nature relieving their over-distention by hemorrhagic profluvia. (Med. Chir. Trans. viii. 292.)

397. To these statements respecting the connection of hemorrhage with diseases of the liver, we may add those made by Dr. Bright in his remarks on jaundice. That accurate observer states, that, should death occur in jaundice from *congestion*, it will probably have been preceded by the passage of blood, more or less freely, from the lungs or the intestines; and the examination of the body will demonstrate that the liver has only partaken with other organs in the congested state of the venous system: that in jaundice from *organic deposit*, at an advanced stage, ecchymosis takes place in various parts, and blood escapes from different surfaces: and that in jaundice from *inflammatory action* in the liver, the tendency to hemorrhage sometimes comes on very early, and is excessive. (Guy's Hosp. Rep. i. 605, 9, 14.)

SECTION VIII.

OF THE OCCURRENCE OF PYREXIAL SYMPTOMS IN DISEASES OF THE BILIARY ORGANS.

398. There is great variety as to the occurrence of pyrexial symptoms, singly or collectively, in diseases of the biliary organs, both in respect of different affections, and even of the same affection in different persons. It is, of course, in affections of an inflammatory character that those symptoms are most constant and best marked; but, on the one hand, more or fewer of the symptoms of pyrexia may be absent in cases of inflammatory hepatic affections; and, on the other hand, more or fewer of them may present themselves in diseases not primarily nor necessarily inflammatory; by either of which contingencies the practitioner may be embarrassed in his diagnosis.

399. There are several morbid conditions of the biliary organs which *rigors* are liable to attend, more particularly the commencement of inflammation, the supervention of suppuration, and the onward passage of gall-stones. The occurrence of this symptom, therefore, in cases in which we have grounds for believing that the biliary organs are affected, will not of itself serve to determine the precise nature of the disease, but must be considered in connection with the previous history of the case, and with the co-existent morbid phenomena.

400. Acute hepatitis, according to the summary statement of Dr. Pemberton (p. 19), commences with rigors, shiverings, and an accelerated pulse. The more guarded language of Dr. Saunders

more correctly expresses the fact in regard to the rigors. "Hepatitis," says this author (p. 258), "is generally preceded by some degree of *horripilatio* and rigor, which, in some cases however, are so slight as to evade the attention or recollection of the patient." Mr. Annesley conceives that there is a difference, in respect of liability to rigors, between membranous and parenchymatous hepatitis. He informs us (i. 416) that, in the East Indies, inflammation of the *substance* of the liver seldom commences with a well marked rigor or chill, unless after exposure to a powerful exciting cause operating upon the system from without, as cold or wet, currents of air, night-dew, or malaria; and that when chills or rigors do mark commencing inflammation of the internal structure of the organ, there are generally one or more of the symptoms characteristic of congestion also present. But, according to the same authority, when the *surface* of the liver becomes the seat of inflammation, the febrile signs, which are more prominent than in inflammation of the substance, often supervene to slight rigors or chills. (P. 423.)

401. With regard to the connection between the occurrence of rigors and hepatic suppuration, Dr. Saunders observes, that, during the formation of pus, frequent rigors take place (p. 261); and Dr. Pemberton mentions (p. 35), "abatement of pain, with pulse increasing in frequency, attended with repeated chilly fits, as indications of suppuration being at hand. But here again these general statements require to be received with limitations. Mr. Twining states, that "rigor is not a general attendant on the formation of abscess of the liver, and that symptom was not observed in the majority of the cases which I have seen" (i. 295); and Mr. Annesley, that in the supervention of abscess of the liver, the presence of rigors can seldom be expected, but slight shudderings and formications are more frequently observed.

402. Even when rigors occur in the progress of hepatic disease, they are not diagnostic of the formation of purulent matter, for, 1st, hepatic disease is often complicated with ague, and the rigors may belong to the febrile paroxysm. 2d, Rigors may proceed also from that state of stomach which is induced by irritation and spasm of the gall-ducts, and by the irruption of bile into the duodenum; and, 3d, as Dr. Nicoll points out, a slight exposure to cold, when the system is at the same time under the influence of mercury, generally brings on rigors more or less intense, and of longer or shorter duration. When, however, rigors or horripilations supervene to the more active forms of hepatic disease, then more dependence may be placed upon them, as characterizing the formation of matter in the liver; but it is chiefly by the manner of their supervening to the antecedent symptoms, and by the relation which they bear to the phenomena succeeding them, that we should be guided in our judgment respecting their cause. (Annesley, p. 527-8.)

403. The liability of rigors to occur in cases of jaundice, particularly when it depends on gall-stones, has frequently been

noticed. "In other diseases of the bowels," Dr. Heberden observes (p. 246-7), "it is a very alarming symptom to have the patient subject to fits of shivering: but very strong ones now and then happen in the jaundice, and last an hour, and return every day, for two or three times, without being followed by any other complaint. It is difficult to guess satisfactorily at the cause of this; but whatever it be, I have suspected that this symptom happens at the time of the stone passing into the intestines." Dr. Powell also notices (p. 93-4) that when a biliary concretion is passing through the ducts, "the attack often commences suddenly, with shiverings, which afterwards occasionally recur." And Dr. Pemberton remarks (p. 49), that in jaundice from spasm or from gall-stones, sometimes there are shivering, and sometimes not: and that when these shiverings occur, it may be observed that they come on after the pain has continued some time, and do not precede the pain, as is the case with those shiverings which attend inflammation.

404. Inflammatory affections of the liver, especially when of an acute character, and when seated on the surface of that organ, are, like those of other organs, generally accompanied from an early stage of their progress (whether or no they may have been ushered in by shiverings) with those symptoms which mark the state of pyrexia to be actually formed, particularly *increased frequency of pulse and heat of skin*; and these symptoms may continue, in greater or less intensity, during the subsequent course of the disease.

405. Mr. Annesley informs us, that in active inflammation of the *substance* of the liver, as it presents itself in India, the pulse is, at a very early period of the disorder, scarcely affected, but it soon becomes accelerated towards night; it is often slower and more oppressed than usual, and occasionally irregular or remittent. (P. 416-17.) As the disease of the internal structure of the liver advances, the pulse becomes quicker, fuller and more irritable in its beat, during the evening and night, and it is often oppressed and embarrassed during the morning and day, and sometimes throughout, unless copious depletions have been practised early in the disorder. (P. 417.) As the inflammation advances to an acme, the febrile symptoms, particularly towards evening, become more marked. The pulse is more frequent, and its beat irritable, but it often varies greatly, both in frequency, regularity, and development; so that, viewed singly, but little dependence can be placed upon this symptom. (P. 419.)

406. When the *surface* of the liver becomes the seat of inflammation, the pulse is generally much accelerated and hard. (P. 423.) This form of hepatitis is also attended with great heat of skin, and with a more unnatural dryness of it, than when the disease is seated in the internal structure. (P. 424.)

407. In the conjunction of inflammation of the *surface* and the *substance*, the pulse is frequent, irritable, sometimes small, and irregular in frequency, fulness, and strength. The skin is hot

and dry on the trunk of the body, or hot and greasy to the feel. (P. 429.)

408. In his enumeration of the symptoms by which the practitioner is to be guided in determining the existence of chronic inflammation of the internal structure of the liver, Mr. Annesley mentions slight acceleration of the pulse towards evening, with an irritable beat, and considerable heat and restlessness through the night; burning heat of the palms of the hands and soles of the feet in the evening, and chilliness in the morning.* (P. 472.)

409. At the commencement of the formation of pus, according to Mr. Annesley the pulse is generally soft and full, is subject to acceleration in the evening, and as the organic change advances, becomes more irritable, quick, and contracted. (P. 529.)

410. "When an extensive collection of matter has taken place in the liver," observes Mr. Twining (i. 295), "the pulse almost always rises above 100, and becomes softer and more readily accelerated by any exertion, or by change of posture from the recumbent to the erect position. In many patients, frequent cold perspirations are observed, attended with anxiety, debility, and a sunk countenance; in other cases, profuse sweating occurs at night. Sometimes in emaciated subjects, the pyrexia assumes the character usually observed in pulmonary hectic."

411. Dr. Conwell explains the varying intensity of the symptomatic fever which attends hepatic abscess, conformably with his doctrine of the entrance of pus into the circulatory system. When the purulent matter of hepatic abscesses passes gradually through the hepatic veins into the general circulation, as happens in many cases, then, he alleges, there is little additional disturbance of the circulatory system. If a larger quantity passes suddenly, it excites collapse, sinking, cold sweats, and faintness. If, in small quantity, these symptoms are less marked. The pus then becomes excreted from the blood with the urine, and the disease is thus naturally cured.

412. But whilst from the high authorities from which these statements, respecting the characters of the pyrexial symptoms, and more particularly of the pulse, in the inflammatory affections of the liver, are derived, they may be considered as very correctly expressing the general results of clinical observations, it must be allowed that they are very far from holding universally true, the greatest diversity occurring in the proportion which the pyrexial symptoms bear to the local, and each of these classes of symptoms, respectively, to the apparent intensity of the affection as revealed by post-mortem examination.

413. Sometimes the pyrexial symptoms manifest themselves in

* On *nocturnal accessions of fever*, as an important ground of *diagnosis* in hepatic affections, and particularly in chronic hepatitis, see a letter from Dr. Kennedy in the second edition of Sir George Ballingall's *Practical Observations on Fever*, &c., p. 301.

cases of hepatic inflammation in which the local symptoms are obscure or absent, so that, whilst we are warned of the existence of disease, we find it difficult, if not impossible, to localize it, or we mistake it for idiopathic fever." "The local symptoms suited to reveal the hepatic affection," says M. Andral, "may be very obscure, and nothing be observed but a continued fever, of which the examination of the dead body alone can prove the non-essentiality." In a case related by this author, a fever of this character was produced by an abscess formed in the liver.

414. In some cases of inflammatory hepatic affection, the constitutional symptoms are wanting, although the local be sufficiently distinct to indicate the existence of disease in the liver, in which case, though the seat of the disease be ascertained, its nature may remain unknown. This absence of the pyrexial symptoms concurring with the presence of the local, occurs rarely in acute hepatitis, but not unfrequently, as Andral observes, in the numerous shades of chronic hepatitis, and even in cases in which collections of pus are hollowed out in the substance of the liver.

415. In other cases of inflammatory affections of the liver, even though running a rapid course, and more especially in those in which the *substance* of the liver is the main seat of disease, both the constitutional and the local symptoms may be wanting in the early stage, so that the affection shall have made considerable advancement before we become aware of the existence of disease. In proportion to the more chronic character of the inflammatory affection of the liver, will be the obscurity of both its constitutional and its local symptoms.

416. Of the non-inflammatory structural diseases of the liver, several which, in their first stages, are unattended with pyrexial symptoms, are liable, in their more advanced periods, to exhibit this class of phenomena. The fever, however, is sometimes so little marked, that it might easily be overlooked. "Often before the physician is aware of it," says M. Portal, in reference to the occurrence of fever in the advanced periods of what he terms hepatic obstructions, comprehending a number of the organic diseases of the biliary organs, "the patient experiences for some time heat in the palms of the hands, in the head, feet, and cheeks, with remarkable redness over the cheek-bones. This heat increases after taking food, and during the night; it becomes at length habitual, constant, and without any interruption, pungent with a great dryness on the skin, and with accessions during the day, and particularly in the evening and during the night."

417. The liability of the pyrexial symptoms that attend the more advanced periods of some of the chronic affections of the biliary organs, to become complicated with those symptoms which constitute the nosological character of hectic fever, and which attend all the different forms of consumption, viz., sweating, diarrhoea, emaciation, &c., has led some medical authorities to recognise a hepatic form of phthisis. Many of the cases which have been so designated, have

no doubt been cases of chronic inflammation, which have passed on in a very slow and insidious manner to the formation of pus, in one or in several portions of the hepatic substance. But the process of softening to which heterologous morbid growths are subject, and which may possibly have some analogy with the suppuration of healthy tissues, seems to be also liable to be accompanied with hectic paroxysms.

418. M. Andral has well remarked, that in certain cases of chronic affection of the liver, though there be not habitually fever, yet, at periods more or less distant, there supervenes a febrile attack, which may last some hours only, or may continue for several days. This accidental fever depends most frequently on the temporary aggravation of the affection of the liver, which passes from its chronic to an acute state. In this case, at the same time that the fever manifests itself, we often see the local symptoms of the hepatic affection become much more marked. The pain, for example, may appear, if it did not previously exist; or if it did, it may become more severe. Sometimes, again, the irregular returns of these febrile paroxysms appear to be less connected with the disease of the liver itself, than with an intercurrent inflammation of the alimentary canal.

419. We may notice, in connection with the pyrexial symptoms, a statement of Dr. Stoker's with regard to the difference in the appearance of the buffy coat of the blood in pulmonary and in hepatic inflammation, which he conceives may often serve as a useful diagnostic mark between these affections. "In simple pneumonia," he says, "the coat on the blood is generally of a colourless white; but when tinged, it is with bright red, the depth of the tunic seldom exceeding a few lines; and to this probably it is owing that the cupping on the surface of such blood is generally remarkable; the thin and tenacious film contracting as it forms, and drawing, towards the centre, the external margin, at the circumference of the less contractile crassamentum. In simple forms of hepatic (inflammatory) disease, on the contrary, the buffy covering is generally darker through its whole substance than in pneumonia, and is externally yellow. It occupies a large proportion of the solid part of the blood, and is not often cupped; when it is cupped, there is reason to suppose that the lungs are partly engaged." Dr. Stoker refers also to Mr. Todd as being satisfied that, on inspecting the cups of blood taken in different diseases, he could frequently pronounce what organs were primarily or chiefly engaged in those who had been bled; blood with a white and cupped surface indicating the lungs to be the seat of disease, and blood with a dark yellow colour and equal surface, the liver. "From the difficulty of ascertaining any infallible diagnostic between certain forms of pulmonary and hepatic diseases (which have so many symptoms alternately or in common), the foregoing observations," adds Dr. Stoker, "will, if found applicable in practice, be justly appreciated." (*Patholog. Observ. part i. p. 41.*)

SECTION IX.

OF MORBID AFFECTIONS OF THE NERVOUS SYSTEM ACCOMPANYING, OR SUPERVENING ON, DISEASES OF THE BILIARY ORGANS.

420. That the mental depression with which indigestion is frequently accompanied, depends, in part at least, on *deranged biliary secretion*, is a matter of common belief. The influence of *inflammatory affections* of the liver in inducing the depressing passions, has been noticed by several accurate observers. Sir George Ballingall, in remarking that the class of patients (soldiers) to whom his experience in India had been chiefly confined, is perhaps not the most favourable for making observations on the state of mind accompanying disease, adds, "Yet, whenever I have had an opportunity of turning my attention to this point, I have observed that, in cases of hepatitis, the mind is, in general, obviously affected; and an apprehension and alarm exists, which no external symptom seems to justify. The patient is generally overcome with a degree of languor, listlessness, reluctance to exertion, and aversion to enterprise, for which no adequate cause is conspicuous." "While the patient is apt to indulge in this desponding state of mind, he does not always relinquish his hopes of benefit from the employment of medicine, but, in some instances, seems to entertain an almost superstitious faith in its power; he delights in detailing his miserable feelings to others, particularly to medical men, while, at the same time, it is obvious that he labours under the greatest difficulty in explaining his sensations accurately. From this, he is apt to suppose that his medical attendant does not perfectly comprehend the nature of his complaints, and thinks that if they were completely understood, he might yet be saved."

421. It was observed by Baglivi in his *Practice of Physic* (*Lib. i. Op. Omn.* p. 83), that "cases of jaundice are never to be slighted, for, under the mask and character of jaundice, there are often concealed great, dangerous, and sudden diseases; and jaundiced persons," he adds, "very often die suddenly, as Dodonæus remarks." Baglivi himself mentions a case of sanguineous apoplexy succeeding to jaundice from calculi. (*Diss. de Bil. Nat. &c. Op. Omn.* p. 433.)

422. Morgagni related (*Epist.* xxxvii. 2-6) several cases of jaundice, in which, at an early period of their progress, symptoms of cerebral affection, delirium, and convulsions, manifested themselves, terminating, after a variable period, in death. The dissection of the bodies of these persons exhibited no morbid appearances sufficient to account in any measure either for the jaundice or for the cerebral symptoms and fatal termination,

423. At a more recent period, Dr. Powell, in his *Observations on the Bile, &c.*, published in 1800, mentions (p. 83) that it had happened to him to meet with two cases within a short time of each other, where a jaundice of some continuance was succeeded by decided apoplexy and death; the patients were both females and young, and did not appear likely to be affected with such a disease as apoplexy. "I regretted," adds Dr. P., "that circumstances prevented an examination of these cases after death, because I could not help suspecting more than an accidental occurrence between the two diseases."

424. But the sudden termination of jaundice in cerebral affections has attracted a much larger share of the attention of medical men since the publication (in 1822) of Sir Henry Marsh's *Essay on Jaundice*, in the 3d volume of the *Dublin Hospital Reports*; and various explanations have since been attempted of the relation subsisting between the hepatic and the cerebral affections. "It happens not unfrequently," says Sir H. M., "that patients labouring under jaundice are seized suddenly with symptoms of cerebral disease, and die phrenitic. Upon looking into several cases of this kind, I find that this form of disease exists principally in persons whose nervous system has, from any cause, been previously injured and weakened." Sir Henry refers to a case published by Dr. Cheyne (*Dubl. Hosp. Reports*, i. p. 282), as the first of this kind which excited his attention; but he narrates at least four additional cases of the same description, which had fallen under his own observation or that of professional brethren, and to those he subjoins an epitome of the cases related by Morgagni. "It may be said," he adds, "that in these cases of icterus, the affection of the brain was an accidental circumstance, unconnected with the original disease, and arising from causes quite distinct from the presence or absence of bile, in the circulating system. That jaundice is not the only, or even the principal, cause is very certain; for we often observe patients to be deeply jaundiced, and yet free from cerebral disorder. But that, under certain circumstances, in certain conditions of the nervous system, phrensy may be excited, either by the bile conveyed to the brain, or in consequence of the sympathy which exists between the cerebral and hepatic systems, is an assertion, the truth of which, I conceive, the facts stated sufficiently establish. In practice it is important we should be aware that an icteric patient, who has a weak and irritable nervous system, must be closely looked after, lest alarming symptoms should unexpectedly arise; and in cases of this kind, we should be very guarded and cautious in our prognosis."

425. Dr. Abercrombie, in his work on *Diseases of the Stomach, &c.*, published in 1828 (p. 373), after remarking, that jaundice, even when arising from causes apparently transient, is never to be looked upon as free from danger, many cases being on record, in which death took place in a very unexpected manner, and in which no morbid appearance could be discovered, capable of accounting

either for the jaundice, or for the fatal event, says; "Several years ago, I saw a woman who became suddenly jaundiced a day or two after accouchement. There was no other symptom, and no danger apprehended, until, after two or three days, she became *comatose*, and died. There was very slight effusion in the brain, and no morbid appearance could be discovered in any other organ."

426. At a meeting of the Westminster Medical Society, 30th January, 1830, Mr. Gilbert Burnet related the case of a dissipated young man, in whom an attack of jaundice, at an early period of the disease, terminated in coma and death. "An examination of the body was not permitted; but, from the absence of uneasiness in the region of the liver, and the peculiar lividness or greenish tint which prevailed, Mr. Burnet professed himself inclined to consider this to be one of those cases of jaundice, in which the bile is not eliminated from the blood, as contrasted with those more ordinary forms of icterus in which it is freely secreted, and subsequently re-absorbed; or, at least, that the non-elimination was the more serious part of the case, as it is always the most serious form of jaundice; and he puts it to the consideration of the Society, whether death, in these instances, might not, in some measure, resemble apoplexy? in that the coma and oppression of the sensorium might be accounted for by supposing that the blood, vitiated by the admixture of bile or the non-separation of its elements, would be unfit to excite the brain to the due performance of its functions, as the circulation of venous blood there, is in apoplexy." (Lond. Med. Gazette, v. 631.)

427. In the 4th volume of the Dublin Medical Journal (January, 1834), Dr. Griffin mentions that the question, On what morbid state the occurrence of coma and sudden death in jaundice depends? had been very forcibly impressed upon his attention, by the occurrence of four cases of jaundice, under his own observation, in one family, and within a few weeks of one another, which, though unattended with any unusual or remarkable symptoms indicative of impending danger, ran rapidly into coma, and, in two, terminated in death. Dr. Griffin's reflections seem to have led him to the conclusion that, in cases of the kind alluded to, the jaundice is secondary, or symptomatic only, depending on some oppressed or actually diseased state of the brain, making for some time an insidious progress, and at length manifesting itself by suspending the functions of the liver.

428. "An endeavour has been made," says Dr. Griffin (p. 355), "to draw some distinction between cases of jaundice in which the bile is not eliminated by the liver, and those in which it has been secreted and re-absorbed. That such distinction exists, and that the former are of a more dangerous nature than the latter, inasmuch as they necessarily include either paralysis or great disorganization of the organ (the liver), no one can deny; but it does not follow from this, that the system sustains more injury by the want of elimination of bile, than by its secretion and re-absorption.

The cases usually end fatally, not because the blood is more vitiated, but because the vitiation, such as it is, arises from, and is accompanied by, more serious disease. If, then, we cannot account for these cases of sudden coma by any absolute effects of retained bile, it only remains for us to inquire whether they might not be explained on the supposition of previous cerebral disease."

428. The explanation of the greater tendency to coma and death in the one of these classes of cases than in the other, to which Mr. Griffin objects, has been ably maintained by Dr. Alison (Edin. Med. Surg. Journ. 1830, xlv.), whose attention had been particularly directed to this form of jaundice by cases that had occurred from time to time in the wards of the Royal Infirmary of Edinburgh, and been made the subjects of clinical prelection. "I apprehend," says Dr. Alison, "that we have now sufficient evidence to establish two points; 1st, The frequent occurrence of jaundice in cases where the bile-ducts are pervious, and appear empty after death; and 2d, the peculiar (I would not say either the uniform or the exclusive) tendency of such cases of jaundice to produce delirium and coma, and prove rapidly fatal. If it be true, that the cases of jaundice thus dependent on suppression of the secretion and retention of the biliary matter in the blood, are also those in which the nervous system is apt to be peculiarly and dangerously affected, another important inference may be drawn from these facts, viz., that the retention, in the blood, of matter destined to excretion, is much more generally hurtful to the living body, than the re-absorption, into the blood, of matters which have been secreted at their appropriate organs, but not thrown out of the body in consequence of obstruction to their outlets. At first view, this appears improbable; but it is supported by the analogy of other facts. And if it be true, as stated by Dr. Prout, that nothing is absorbed in the living body without having been previously acted on by the fluids of the body, and undergone a process more or less analogous to digestion, this difference between the noxious qualities of excretions retained and excretions re-absorbed, may be easily understood. It is probable that there may be cases where the re-absorbed bile is likewise the cause of fatal coma; and when we reflect how very variously other narcotic poisons affect the nervous system in different individuals, it is not surprising that this difference should be observed. But that the retained bile has the peculiarly noxious quality, seems to be clearly shown by the very large proportion of cases of jaundice early fatal in the way of coma, in which the bile-ducts have been found pervious and empty."

429. Which ever of these explanations respecting the connection subsisting, in the cases that have been referred to, between the jaundice and the coma, may be regarded as the correct one, whether the brain be considered as the *proto-pathic*, and the liver as the *deutero-pathic* organ, or the converse, — the fact which these cases establish, of a frequent connection between those two morbid states, is of the highest importance in practice.

CHAPTER IV.

MODES OF TREATMENT BEST ADAPTED FOR REMOVING THE SEVERAL MORBID CONDITIONS OF THE BILIARY ORGANS, OR FOR DIMINISHING THEIR INJURIOUS OPERATION ON THE ECONOMY.

430. In the treatment of the diseases of the biliary organs, medical practitioners, and particularly those of Great Britain and the British Colonies, have been accustomed to place great reliance on the efficacy of mercury, either as the sole remedial agent, or as a most powerful auxiliary to other means. This substance has been supposed not only to fulfil, with an efficacy superior to all other remedies, every indication which the treatment of the diseases of the biliary organs suggests or requires; but also to produce beneficial effects in the removal of these diseases, of which pathologists can afford no *rational* explanation, which are not consequently reducible to therapeutical indications, and which may, in that respect, be designated *specific*.

431. Besides mercury, other remedies have been supposed to exist, possessed of peculiar or specific powers over the diseases of the biliary organs, though none have attained such high repute with the medical profession. In the view which we purpose to take of the treatment of this class of diseases, we shall, in the first place, consider the several rational therapeutical *indications* which diseases of the biliary organs present, and the modes of effecting these, independently of the employment of supposed specific remedies; and, in the next place, we shall consider the opinions of medical men as to the employment of specific remedies, and particularly of mercury, in the treatment of affections of the biliary organs.

432. In attempting to exhibit a general view of the principles upon which the treatment of the diseases of the biliary organs should be conducted, it will be convenient to consider them under the following heads: *1st*, Simple functional derangements, including concretionary obstructions; *2d*, Congestive and inflammatory affections; *3d*, Organic alterations of a mild or of a malignant character; and, *4th*, Preternatural collections of fluid.

433. The view which we formerly took of the simple functional or dynamical derangements of the biliary organs, seems to suggest the four following indications of treatment, as applicable to their several forms, viz., *1st*, To diminish biliary secretion when excessive; *2d*, To increase this secretion when deficient; *3d*, To correct it when vitiated; under which head may be included the consi-

deration of all questions relative to the powers of remedies in preventing the formation of biliary calculi, or in promoting their solution when actually formed; and, 4th, To promote the excretion of the bile, or the expulsion of biliary concretions, whether the seat of retardation of either of these two substances shall be the gall-ducts or the intestinal canal. With the last of these indications may be conjoined those of removing spasm of the biliary passages, and of relieving pain in these passages.

434. It must not be forgotten, however, that the necessity of attending to these several indications is not confined exclusively to those diseases which are of a strictly dynamical character; for there are no diseases of the biliary organs in which one or more of the several functional derangements these indications are intended to obviate, is not liable to occur.

435. The indications of treatment more peculiarly applicable to the other classes of the diseases of the biliary organs above enumerated, seem to be, 5th, To remove vascular turgescence, and subdue phlogistic diathesis and local inflammatory action; 6th, To promote absorption of matters foreign to the natural substance of the organ; 7th, To improve the general health; and, 8th, To give vent to preternatural collections of fluid.

FIRST INDICATION,

TO DIMINISH BILIARY SECRETION.

436. Conformably with the plan above sketched, the *first* indication which falls to be considered relative to the treatment of diseases of the biliary organs, is that of diminishing the hepatic secretion when this is in excess. (21.) Independently of any power which may be attributed to mercury of *diminishing* the amount of the biliary secretion, by a direct action on the secretory apparatus of the liver, a matter afterwards to be noticed, it is only by avoiding those occasional causes which give rise to an increased biliary secretion, that we can expect to fulfil this indication, viz., by avoiding, as much as possible, exposure to excessive degrees and rapid alternations of temperature, and by the substitution of a diet chiefly farinaceous, in place of one consisting mainly of animal food. (24, 27.) The efficacy of these measures, in diminishing the hepatic secretion, may be supposed to depend on their exerting some intermediate operation, either in the way of modifying the qualities of the blood, or of removing a congestive state of the vascular system. If the excessive biliary secretion shall appear to depend on any morbid condition of the alimentary canal, it is obvious that to remove this must be a fundamental object of concern to the practitioner.

SECOND INDICATION,

TO INCREASE BILIARY SECRETION.

437. The *second* indication which we have mentioned is that of increasing the biliary secretion when deficient. (9.) It may be presumed that the ancient physicians, in applying the term cholagogue to a certain class of medicines, whatever speculative views they might entertain as to their mode of operation, were at least impressed with the belief that the administration of these substances is followed by a discharge from the bowels of an increased quantity of bile. As the total or partial deficiency of bile in the alvine evacuations may be supposed to depend on one or other of three circumstances, — non-secretion from the biliary pores, non-excretion from the ducts, and non-evacuation from the bowels; so the presence of an unusual quantity of bile in the alvine evacuations, after the administration of a particular medicine, may be supposed to indicate a power in that medicine, either, 1st, To produce an increased secretion of bile; or, 2d, To promote the excretion of bile formed independently of it, — to emulge the gall-ducts, as it is usually expressed; or, 3d, To empty the part of the intestinal canal into which the bile is discharged. But it may possibly be, also, that these are not necessarily separate or incompatible virtues or powers. A medicine, of which the primary operation is to clear the duodenum, may be conceived by that very action to facilitate the flow of bile from the gall-ducts; and this easier flow, in its turn, may be supposed to promote the secretion. It is not wonderful, therefore, that a great diversity should subsist in the explanations stated, or glanced at, by different medical men, as to the exact mode of operation of *cholagogue* medicines.

438. The cholagogue medicine on which most reliance is placed, in this country and its colonies, is undoubtedly mercury; and we shall afterwards find that, in the estimation of many, the benefit which attends its exhibition in biliary affections, primarily originates in its specific power of increasing the energy of the secretory apparatus of the liver, and thereby increasing the amount of the biliary secretion, just as digitalis and other substances increase the amount of the renal secretion. But, by other practitioners, the benefit resulting from its administration is attributed to its action on the upper portion of the intestinal canal, an action not peculiar to itself, in however high a degree it may possess it, but common to it with several other medicines of a purgative character. Thus Dr. Saunders, in remarking that, “in some cases, the resistance to the secretion of bile may arise from the viscidty of the fluid obstructing the extremities of the common duct, as it enters the duodenum,” adds, “this will be removed most effectually by calomel, scammony, or jalap, which seem in their operation to stimulate and evacuate

the duodenum, while many other purgatives act most forcibly on the large intestines."

439. Along with the indication for increasing the amount of the biliary secretion when deficient, we may consider the question whether medicine affords us any means of counteracting the injurious effects which arise from a deficient secretion of bile, or from its non-excretion into the duodenum, so long as one or other of these morbid states continues? There are obviously two ways in which these states may operate injuriously on the economy; the one, depending on the absence of the bile from the situations in which it is usually met with, is limited to the function of digestion; the other, depending on its presence in unusual situations, extends to the general economy, and particularly affects the exercise of the functions of the nervous system.

440. (1st.) So far as the function of digestion is dependent, for its due exercise, on a proper intermixture of bile with the alimentary matters, it must be impeded by a deficiency of that fluid, whether occasioned by non-elimination or non-excretion. If we were acquainted with the precise purpose which the bile fulfils in this function, we should be assisted in judging what aid medicine can afford for remedying its deficiency. Those, for instance, who imagine that it exerts a chemical action in correcting acescency, naturally suppose that its place may, in part at least, be supplied by alkaline medicines. Those, again, who conceive that it is by stimulating the peristaltic action of the intestines that the bile promotes the function of digestion, must consider the administration of laxative or purgative medicines as the proper method of compensating its deficiency; and particularly those laxatives or purgatives which are supposed to act on the upper portion of the alimentary canal. If, leaving out of view such speculative judgments as to the best means of supplying the deficiency of bile, so far as the function of digestion is concerned, we inquire into the results of experience in the treatment of that class of cases, the symptoms of which are supposed to depend on this cause, we find that the most beneficial measures of treatment consist in, 1st, the careful regulation of the diet, so as to render it of as easy digestion as possible; 2d, the administration of bitter tonics; and 3d, that of laxative or purgative medicines, to such an extent as is found requisite to keep the bowels gently open. "The temporary defect of bile," says Dr. Saunders (p. 254), "may be supplied by various bitters, occasionally united with rhubarb, aloes, and the like."

441. The bile of different species of the lower animals was formerly much used, with a view to the fulfilment of this indication. "Thickened to the consistence of an extract, or employed as an excipient in aperitive or purgative pills, the bile of animals," says M. Portal, "is frequently prescribed in the intention of compensating for the natural bile. It has been recommended in cases in which natural bile did not flow from the liver to the duodenum

freely, and in sufficient quantity for the process of digestion." "The bile of the calf," the same author observes, "is most commonly used in the dose of half a drachm to a drachm." (P. 62.) Nor has this remedy, even at the present day, altogether lost its reputation. "We recently saw," says a late writer, "two instances of the most obstinate and long protracted jaundice, where the patients were reduced to skeletons, and the skin, for many months, was the colour of mahogany, and where inspissated ox-gall produced the best effects; tinging the motions, lessening the irritability of the stomach, and increasing the peristaltic action of the intestines. In both instances, recovery ultimately took place, after all hopes had been abandoned by physicians and friends." (Johnson's Med. Chir. Rev., July 1831, p. 91.)

442. (2d.) Whatever may be the purpose of the bile, or its importance as a *secretion* destined to answer some end in the economy, it cannot be doubted that the formation of this substance is of not less consequence as an *excretion*, securing the elimination from the system of some principles which, if allowed to accumulate, are calculated to exert a noxious operation upon it. When, therefore, the bile is either not secreted, or is reabsorbed after being secreted, have we any means of correcting its injurious operation on the economy, and particularly on the nervous system; of overcoming the languor and oppression which are the ordinary accompaniments of jaundice, or the coma which, as we have seen, in some cases supervenes? Little, we fear, in the way of palliation is in our power in these respects. In the very small number of cases in which an attack of coma supervening on jaundice has been successfully combated, the means from which benefit seems to have been derived, have been, 1st, the free use of purgatives; and, 2d, such applications to the head as are suggested by the apprehension of an inflammatory affection of the brain.

THIRD INDICATION,

TO CORRECT VITIATED BILIARY SECRETION.

443. The *third* indication which we have to consider, is that of correcting the biliary secretion when vitiated (32), under which head fall to be included the prevention and the solution of biliary concretions,—so far as it is in the power of medicine to promote these objects.

444. The degree of control over the acid or alkaline character of the urine which medical men have derived from their improved acquaintance with the morbid conditions of that fluid, has excited hopes of farther therapeutical triumphs resulting from a more intimate knowledge of the vitiations to which the various glandular secretions are subject. But in whatever anticipations on this head the sanguine may indulge, it cannot be pretended that any know-

ledge which we at present possess of the biliary secretion in health or disease, enables us to lay down any rational indications for the correction of its morbid conditions, with one exception, perhaps, to which we shall presently allude. That we possess empirically a knowledge of remedies, from the use of which such consequences result, is a very general belief among practitioners; but the remedies to which such virtues are ascribed, do not seem to differ from those that are supposed to possess the power of increasing or diminishing the biliary secretion.

445. The prevention of the formation of biliary calculi must obviously depend mainly on the avoidance of those causes which we formerly noticed as conducing to their production. (214.) It has been alleged, however, that, among the various remedies employed against biliary concretions, there are none which have been nearly so successful as alkalies taken for some continuance; and to explain their efficacy, it has been conceived that, by impregnating the blood, these substances supply to the biliary secretion an additional quantity of that principle, upon a deficiency of which the formation of biliary calculi depends, and thereby render the bile not only less disposed to concrete, but even capable of softening and dissolving concretions already formed. This statement of the beneficial operation of alkaline medicines in at least preventing the formation of gall-stones, accords with the chemical principles on which, as we formerly saw (46), the formation of cholesterine concretions was explained by Muratori, agreeably with his comparative analysis of healthy bile, and of bile containing calculi.

446. Amongst the expectations of advantage to be derived in the treatment of diseases from the study and advancement of animal chemistry, which have at different times been entertained, must be included, that of discovering means by which the solution of biliary calculi within the body may be effected. Accordingly, those agents which were found capable of dissolving these calculi, when brought in contact with them out of the body, have at different times been recommended as proper for internal administration in cases in which biliary concretions are suspected to exist. Of the supposed solvents of biliary concretions, the medicine which acquired the widest reputation seems to have been a combination of sulphuric ether (three parts) with spirit of turpentine (two parts), recommended by Durande, a physician of Dijon, administered at first in a very small dose (2 scruples). This remedy has been much commended, not only by its author, but also by Sæmmering, Richter and others, who attribute to it, without hesitation, the property of dissolving biliary calculi; while those who object to recognise in it such a power, on the ground that the substances of which it is composed cannot possibly be carried into the gall-bladder or ducts so little changed as to preserve any sensible degree of power, admit it to be established, by a considerable number of facts, that the remedy of Durande occasions or facilitates, in certain cases, the expulsion of biliary calculi; and this they sup-

pose it to effect, by calming the spasm of the parts containing them. (Bricheteau, Mem. Soc. Med. d'Emul. ix. 208.)

FOURTH INDICATION,

TO PROMOTE EXCRETION OF BILE, ETC.

447. The *fourth* indication of treatment which we have specified is that of promoting the excretion of the bile (50), or the expulsion of biliary calculi, in the first place from the gall-ducts, and in the second place from the intestinal canal.

448. When an accumulation of bile occurs in the biliary passages in consequence of torpor of the powers by which it is usually propelled, or of some slight mechanical obstruction, the administration of emetics, by calling into action the diaphragm and abdominal muscles, which in that state forcibly compress the liver, seems calculated to effect this indication. "Nor," says Dr. Coe, "does this only appear reasonable in theory, but it is also found to be true in fact."

449. When by such means an accumulation of bile is thrown into the alimentary canal, much benefit is derived, in the way of promoting its easy passage, from the copious use of diluents, with or without purgative, or rather laxative, medicines. "In general," says Dr. Saunders, "bile is a purgative sufficiently stimulating for its own evacuation, only requiring the assistance of warm water for facilitating its discharge. If, however, in some cases it irritates without purging, I would recommend the use of small doses of the neutral salts, such as soluble tartar (tartrate of potass), sal catharticus amarus (sulphate of magnesia), and the like; and in all cases," he correctly adds, "they do most good under dilution."

450. We come next to inquire how far the medical art possesses any means of facilitating the passage of a biliary concretion through the gall-ducts into the intestinal canal. (139.) It is obvious how much our speculative views on this matter must depend on the opinions we entertain respecting the causes which retard or propel a biliary concretion in its course; whether we suppose the resistance to be simply the physical coherence of the coats of the ducts, or to be in a greater or less degree dependent on vital spasmodic contraction; and whether we suppose the power by which this resistance is to be overcome, to be, 1st, as some imagine, the muscular contraction of the ducts themselves; 2d, as is conceived by others, the compression of surrounding parts; or, 3d, as has also been suggested, the pressure of a fluid accumulating by continued secretion behind the obstacle.

451. The measures which in practice have appeared most serviceable in fits of gall-stones, and, as has been generally supposed, most useful in promoting their escape into the alimentary canal,

have been opium, the warm bath and warm fomentations, emetics, and sometimes blood-letting.

452. The beneficial operation of *opium*, and perhaps of other narcotics, has been considered a strong argument in favour of attributing the detention of gall-stones in the ducts, in part at least, to spasmodic contraction, of which they are supposed to effect the removal. The difficulty, however, has been suggested, that, in allaying this spasm, narcotics must, at the same time, put a stop to any muscular power by which gall-stones can be supposed to be propelled. But, whatever degree of influence opium may be supposed capable of exerting upon the onward course of a gall-stone, it is acknowledged on all hands, that, with a view to the alleviation of the pain attending this, it must be administered during a fit, and that in very considerable quantity. Dr. Pemberton says, that the quantity administered ought to have no limit but the absolute abatement of the pain; and, till that object is obtained, the patient should take a grain of solid opium, or twenty-five drops of Tinct. Opii, every hour. A starch clyster, he adds, ($\frac{3}{4}$ iv. c. Laudan. g. xl.), repeated every sixth or eighth hour, will frequently produce immediate relief. The mode of administration recommended by Dr. Powell is not less decided. "It is not sufficient," says he, "to administer small, or even ordinary doses, which are too little to produce any definite effect, but rather to give a large one in the first instance, and to follow this up by the repetition of smaller at certain intervals, which will prolong the powers of the medicine, and sometimes the concretion will pass while the patient is under its influence." M. Brichteau, in noticing that Haller had often recourse to opium, in fits of gall-stone, to calm the spasms and pains of the affected parts, adds, "I have seen it several times fail. On the other hand, I have often had to congratulate myself on having administered the tincture of castor, in small doses, in anti-spasmodic potions." (P. 209.)

453. Immersion in the *warm bath*, and the use of *warm fomentations* externally, as with hot flannels, or a bladder half filled with hot water, or internally in the way of clysters, are usually recommended to be had recourse to during a fit of gall-stone, in the belief that their employment tends to diminish the force of muscular contraction, and thereby to facilitate the passage of the stone. According to Dr. Powell, in order that the warm bath may produce the most powerful relaxant effects, its temperature should be from 100° to 110°, and certainly not less than the lower of these degrees; and the immersion should be continued till an incipient faintness is produced, which, whether it take place after a longer or a shorter time, is the best criterion to regulate its duration, for where faintness has not followed, the bath has not seemed to have any good effect. This may be repeated according to the violence of the symptoms; and the feelings of the patient will, while the fit continues, lead his own wishes to a repetition.

454. M. Bricheteau, in giving a very unfavourable statement of the results of the ordinary means of treatment in a fit of gall-stone, mentions that, having in one case formed the idea of applying two bladders filled with *ice coarsely pounded*, before and behind, in the direction of a line traversing the epigastrium, though, on its first application, it seemed only to produce a change in the *nature* of the sufferings, it was found, when the ice was melted, that the frightful pain the patient had been enduring for thirty-six hours was gone. Subsequently to that case, M. Bricheteau has several times had recourse to the same means, under similar circumstances, and it has always, he says, succeeded, not in curing the disease, but in putting a stop to the paroxysms, and in postponing them considerably. (l. c. p. 207.)

455. In a fit of stone in the biliary ducts, *blood-letting* may be requisite for the removal or for the prevention of inflammation. But the intention in which it is generally had recourse to, in cases of this kind, is similar to that on which the employment of opium and the warm bath is founded, viz., to produce relaxation of the general muscular system, and through it, as is conceived, of the biliary ducts. "In strong sanguine constitutions," says Dr. Coe, p. 242, "emptying the vessels will help to relax the fibres, and by that means promote the dilatation of the ducts for the expulsion of the calculi, and, moreover, render the use of other medicines both more safe and more effectual. For these reasons, we order bleeding in a fit of the stone in the urinary passages; as also sometimes for women in labour, or just before it is expected." As to the manner of venesection proper in cases of this kind, Dr. Powell recommends that it should be performed once in rather a large quantity, and no more; "for, in the relaxation of muscular contraction and diminution of increased action, the effect will not be in proportion to the quantity lost upon the whole, but to the celerity with which that quantity is taken away; and twenty ounces of blood lost at once, will be much more efficacious than forty taken at repeated times, even though the intervals be but short between each." (P. 151.)

456. The administration of *emetics* during a fit of gall-stone has been generally recommended by practitioners, partly on the idea of their contributing to produce the state of general muscular relaxation, and partly on the same principle of exciting the action of the diaphragm and abdominal muscles, to which we have alluded in speaking of the propulsion of the bile (446). Among the advocates for their use may be mentioned Dr. Coe, Dr. Herberden, and Dr. Saunders, the latter of whom speaks in the following terms: "The passage of gall-stones may be promoted by gentle vomits, and, for this purpose, ipecacuanha is frequently given; but its action will be assisted, if it be exhibited in small doses, and divided, so as to occasion for a time a degree of nausea, but ultimately to produce the full effect of an emetic. Tartarised antimony, as producing a much greater degree of muscular relaxa-

tion than ipecacuanha, and, on ordinary occasions, a more complete evacuation of the liver and gall-bladder, may be preferable. For the same reason, tobacco deserves a trial, as the sickness which it occasions resembles sea-sickness more than any other; and it is probably on this principle that sea-sickness has been so very efficacious in those cases." Dr. Powell's experience is unfavourable to the use of emetics. He thinks that, when they have been administered, the duration of the disease has not been shortened, nor any single symptom alleviated in its violence. Dr. Pemberton conceives that the explanation which he has given of the manner in which the passage of a gall-stone through the ducts is effected, may serve, in some measure, to explain the contradictory results obtained as to the power of emetics in forwarding one: "The effect of an emetic is not only to produce relaxation of the whole body, but also to increase the secretion of bile. This increased quantity of bile, if its exit be prevented, will mechanically increase the distention of the duct, and thus will a passage be opened for the calculus. But if the stone, in consequence of its angles, does not completely close the duct, the bile will pass off, and no distention take place."

457. "There is a difference of opinion," remarks Dr. Stokes, (Lond. Med. Surg. Journ. 29th March, 1834), with respect to the employment of emetics. The object of their exhibition is to force the calculus through the ducts by the shock given by the sudden and violent contraction of the abdominal muscles, and also to relieve spasm by their subsequent relaxing effects. Some practitioners of high authority, however, state that this practice is not unattended with danger, and give cases of the rupture of the gall-bladder after the exhibition of an emetic. I am sure the practice, in some cases at least, is dangerous. A distinguished medical friend of mine has related to me the particulars of a case of this kind, in which the exhibition of an emetic was followed by rupture of the gall-bladder and fatal peritonitis. In this instance, the case was not so deplorable, so far as the patient was concerned: he was labouring under extensive disease of the liver, and only exchanged a lingering for a sudden death; but this furnishes no excuse for a medical practitioner. If I were to hazard a conjecture, I would say, that emetics can be employed with safety only in the early stage of the disease, when there is no obstruction from organic disease; for the longer the jaundice has lasted, the greater is the chance of obstruction from organic disease. Again, you should never use them when there is evidence of a distended gall-bladder. If you can feel the tumour formed by the gall-bladder in the right hypochondrium, you may be sure something has been going on for a long time, and you should be cautious in giving an emetic. Never use it, then, where you can feel a tumour in the region of the gall-bladder. If you give it at all, give it in the early stage, and after premising venesection, leeching, and the use of the tobacco injection."

458. When gall-stones give rise to symptoms of ileus (361,) the

means to be employed for overcoming the obstructed state of the alimentary canal must be the same as when this state arises from other causes. Indeed, it often happens in cases of this kind, that we are ignorant of the immediate cause of the symptoms till the case terminates, either favourably by the discharge of the concretion, or in death.

FIFTH INDICATION,

TO SUBDUE PHLOGISTIC DIATHESIS, ETC.

459. We have next to consider the means of effecting the *fifth* indication of treatment, that, viz., of removing vascular turgescence, and of subduing phlogistic diathesis and local inflammatory action. It seems to be now very generally allowed that, whatever assistance the medical practitioner may seek to derive, in the treatment of the inflammatory affections of the liver, from the administration of specific medicines, these must be used as auxiliaries to the antiphlogistic measures that are required and usually employed in similar affections of other organs, and not as substitutes for them. It is not on the ground of antiphlogistic remedies being unnecessary, or unsuitable to these affections, that the utility of mercury, in particular, is now maintained by its more judicious advocates, but on the ground of these remedies being insufficient of themselves, however diligently they may be employed, and of their requiring to be supported by this additional power.

460. As respects the practice of general *blood-letting* in the inflammatory affections of the liver, when the symptoms are well marked, it must be conducted on the same general principles as in inflammations of other organs. When the symptoms are of a more obscure character, as, perhaps, from the inflammation affecting the substance, rather than the surface of the organ, we may possibly derive, from the appearance of the blood drawn, a more precise guide as to the length blood-letting should be carried, than is furnished by the external phenomena. Generally speaking, it may be said that the difficulty of overcoming acute inflammation of this organ, and of preventing it from assuming a chronic character (even should the occurrence of any more active termination be obviated), is a strong reason for prosecuting blood-letting vigorously at an early period. The quantity to be drawn must, of course, be influenced by the conditions of the patient; and those recently arrived in a warm climate, admit of and require a more copious detraction of blood than those who have been resident for a time in such a climate.

461. When, from the previous employment of general blood-letting from the constitution of the patient, from the slightness of the attack, or from the stage at which the disease has arrived, farther general bleeding seems inexpedient, notwithstanding the

continuance of some degree of phlogistic diathesis or local inflammatory action, great benefit may result from the more or less ample detraction of blood locally. The local detraction of blood may be rendered necessary also, by the state of vascular turgescence, or congestion.

462. When blood is to be abstracted locally, on account of hepatic affection, we have to determine, *first*, the situation, and, *second*, the manner in which the operation should be performed. As to the first of these points, some conceive that more benefit results when the blood is drawn from certain distant parts, as the anus or the sacrum, rather than immediately from the region of the liver.

463. "When there is pain, or even merely uneasiness, in the hepatic region," says M. Regnault, "the application of leeches to the anus is, in almost all cases, indicated. This means is truly powerful, and its happy effects are particularly seen in acute hepatitis. When the inflammation is seated in the part of the liver immediately under the integuments, the application of leeches to the painful part answers well; but in every other case, they should be applied to the anus, to the number of ten, fifteen, and even twenty, according to the strength and constitution of the patient. It is unnecessary to adduce on this subject the authority of theory, since experience irresistibly demonstrates the utility of this means, which is almost always preferable to general blood-letting, in cases of hepatitis, unless the constitution be very plethoric; and even then it is proper to have recourse to leeches after a vein has been opened." (*Sur les Alterations, &c. du Foie.*) "In all cases of sanguineous congestion of the portal system, or its abdominal sources," says Dr. Conwell, sect. 185, "after adequate general bleeding, local depletion is most efficaciously performed by the application of leeches around the anus, over the abdominal parietes and the perineum, as the blood drawn from those parts reduces the quantity about to be poured directly into these sources of the portal system, whether it be derived from arterial or venous capillaries." Regnault also conceives, that the application of leeches to the anus renders the circulation in the liver more easy, by unloading the vena portarum and the whole abdominal venous system.

464. As to the second point, there can be no doubt that, for abstracting blood from the hepatic region, leeches are preferable to cupping, for the reason specified by Mr. Annesley, viz., that the pressure of the number of glasses which are requisite to the abstraction of a sufficient quantity of blood, is, in some instances, productive of so much pain as to aggravate the disease. (P. 586.) This will be a motive with the practitioner, when leeches are not to be had, to apply the cupping-glasses to the sacrum, rather than to the hepatic region. Indian practitioners speak, with great satisfaction, of the efficient manner in which the leeches of that country fulfil their functions. "More than double the number of European leeches," says Mr. Annesley, "will not equal in their opera-

tion the leeches of India." The same very respectable author recommends strongly, that, after blood has been drawn from the region of the liver by leeching, measures should be taken for arresting the bleeding from the bites, as by the application of the muriated tincture of iron; and that a large hot poultice should then be placed over the situation where the more urgent symptoms were experienced, and frequently renewed. The propriety of arresting the bleeding from the leech-bites, Mr. Annesley rests partly on the difficulty there may be of doing so afterwards, and partly on its being much better that an ascertained quantity of blood should be withdrawn, than an indefinite loss of this fluid be occasioned by allowing the bleeding to continue afterwards. But in this country, where it is often very desirable, for economical reasons, to avoid a large employment of leeches, the application of hot poultices to bleeding leech-bites is often found very advantageous. The propriety of repeating the local, like the general bleedings, must be determined by the particular circumstances, antecedent and present, of the individual case. "Local bleeding may be required," observes Dr. Malcolmson, "even when there is no doubt of abscess having formed, as the irritation it causes is constantly inducing renewed inflammation in the surrounding hepatic substance, or in the peritoneum or other viscera."

465. The powerful assistance to be derived in the subduing of phlogistic diathesis from the free administration of *purgative medicines*, is a point of practice so well established among British physicians, that its credit is not likely to be shaken by those glowing apprehensions which the followers of the Broussaian doctrines are wont to express, of the mischief that must result from its employment, in the production or aggravation of the gastro-enteric inflammation which they regard as so constant an attendant of febrile maladies. Even in inflammation of the liver, of which the Broussaists believe gastro-enteritis to be the frequent, if not the universal, precursor, British medical practitioners hold it as established, that purgatives are the remedies next in efficacy to blood-letting; and are satisfied that, both on account of the beneficial influence they may have upon the upper part of the intestinal tube, and their utility in lessening the force of the circulation, they should not be omitted in this disease.

466. As to the selection of the particular purgative to be employed (setting aside at present the claims of calomel, which will fall afterwards to be noticed), the neutral salts seem to be those most likely to answer the indication, and which stand highest in the opinion of practitioners. The observations of Dr. Saunders upon this point seem to us very judicious. "As subservient to the intention of resolution," says he, "medicines promoting alvine evacuations are highly expedient. For this purpose, those which are of a saline nature appear to me to claim a preference; and perhaps it is adding not a little to their efficacy to exhibit them in a diluted form, in which state they not only seem to be more

strictly antiphlogistic, but are less liable to occasion nausea and other disagreeable sensations in the stomach." Even when calomel is administered, it is acknowledged to be proper that, in being given over-night, it should be followed up in the morning by some other purgative—as some of the neutral salts, the infusion of senna, or castor-oil. "The neutral salts," says Sir G. Ballingall (p. 104, 5), and his opinion seems to coincide with that of the most judicious practitioners, "is the remedy to which I am disposed to give the preference; but each has its advocates, and perhaps its peculiar advantages."

467. Not less judicious is the recommendation of the same author, that, when purgatives appear tardy in their operation, there ought to be no delay in assisting them by the employment of injections. "When by these means copious evacuations are procured, they seldom fail of producing the most beneficial effects, relieving the indescribable sense of tension, stuffing, and oppression about the region of the liver, and making the patient feel comparatively light, easy, and cheerful."

468. In the congestive, as well as in the more decidedly inflammatory affections of the liver, great benefit will be derived from keeping up a pretty free discharge from the lining surface of the alimentary canal, by the administration of purgatives. (Annesley, i. 399.) In reference to that form of hepatic hemorrhage in which there is a discharge of blood into the biliary passages, and the consequent black discoloration of the bile (64), Dr. Saunders says, "It is best cured by gentle purging, which will diminish the quantity of blood returned by the vena portarum, and the liver will thereby be relieved by an artificial diarrhœa acting on the extremities of the exhalants of the intestines" "In such a diseased state of the organ, I have never seen mercury useful."

469. Any disposition which the practitioner might entertain, from a reliance on the antiphlogistic influence of *emetics*, to have recourse to the employment of these remedies in the treatment of hepatitis, is discouraged by the strong dissuasion of Mr. Annesley, who affirms that, where any inflammation of the liver, or even a tendency to it, exists, the acute character of the disease is greatly increased by their exhibition. "When emetics are exhibited in hepatitis, they often afford relief for a short time after their operation; but the inflammatory symptoms are soon afterwards increased if they previously existed, or, in the more chronic cases, where they never were very manifest, they become for the first time developed." It is only, therefore, as a test of the existence of inflammatory affection, and of the expediency of adopting a decidedly antiphlogistic treatment, that, in Mr. Annesley's opinion, emetics are to be used in suspected cases of hepatic inflammation.

470. The use of *counter-irritants*, and particularly of *blisters* in the more advanced stages of acute hepatitis, and in the more chronic forms of that disease, is frequently productive of the most beneficial results. Dr. Saunders says, that "blisters, applied to

the region of the liver, co-operate very strongly with the views of blood-letting; and, therefore, in attempting resolution, recourse should be had to them very early." But Mr. Annesley (i. 632) very properly cautions us against resorting to blisters, until after vascular depletions have been employed so decidedly as to subdue the inflammatory action present;—otherwise, they often tend to prolong this action, and thus a reiteration of the depletory measures is required for its removal; and he thinks that, even in the more chronic forms of the disease, their use should be preceded by other measures. "The employment of counter-irritant agents of any sort," says Dr. Malcolmson, E. M. S. J. lii. 358, "in the early stage of the treatment either of hepatitis or dysentery, I have long given up, as they conceal from the patient the internal pain, prevent the careful manual examination of the part, and interfere with the use of local bleeding, fomentations, &c." Baron Larrey, in his *Campagnes d'Égypte* (ii. 45), states, that Dumas, in the *Travaux de la Société Philomathique*, proves, by a series of observations and experiments, that cantharides flies are hurtful in all bilious affections. He himself recommends that the epispastics employed in hepatitis, should be composed of *garou* (daphne Gnidium,) euphorbium, ammonia, boiling water, or any other substance which produces the same effect.

471. When a blister has been applied, the next practical question for consideration is, How the blistered surface ought to be dressed? whether so as to maintain a discharge for some length of time, or so as to obtain a speedy renewal of the cuticle, and the power of repeating the blister, if this shall appear expedient? The weight of authority seems decidedly in favour of the latter plan. "It has been advanced by some," says Dr. Saunders (p. 314–15), "and experiments seems to have justified the position, that a quick succession of blisters to the vicinity of an inflamed organ prevails more over the activity of inflammation than the long-protracted discharges from a single vesication. My own experience having abundantly confirmed the truth of this doctrine, I cannot recommend it to the practitioner in too strong terms." The expediency of this mode of employing blisters in hepatic inflammation, so far as warm countries are concerned, is urged by Sir George Ballingall on another ground. "Blisters," says he (p. 108), "are a never-failing source of relief in almost every stage of the affection." "Every consideration, then, induces us, without hesitation, to have recourse to blisters; and, in regulating their application, I shall barely observe, that I think the repeated application of fresh blisters preferable to the establishment of blister-issues, particularly in a warm climate, where dressings are apt to become rancid, and where sores, if not particularly attended to, are apt to degenerate into troublesome ulcerations."

472. As another means of counter-irritation, applicable to the more chronic forms of hepatic inflammatory affections, some practitioners have recommended the introduction of a *seton*, or the

establishment of an *issue*. "They should be made much below the region of the liver," says an eminent India practitioner, "and so far anteriorly as to allow the patient to dress and attend to them himself. After a discharge has been established from them, poultices, applied directly over them, and frequently renewed, are generally beneficial." Was it from a neglect of this precaution that Sir G. Ballingall was led to allege (p. 109), as to the use of the seton, that "the beneficial irritation on the surface, which it occasions at its first introduction, soon subsides, and the discharge, in general, is not sufficient to produce very material benefit?" Dr. Dick mentions, in a letter afterwards to be more particularly referred to, that, in chronic cases of liver complaints, he had, for several years previously, trusted to a seton or issue made in the side, and with success far beyond his expectations.

473. As a most important part of the antiphlogistic plan of treatment, it cannot be necessary to insist on a rigid adherence to a conformable system of *diet*; a measure which, for various obvious reasons, is more directly, if not more forcibly indicated in the inflammatory affections of the liver, than in those of almost any other organ.

474. There is, perhaps, no class of inflammatory affections, in which it is more necessary than in those now under consideration for the practitioner to be on his guard against having his apprehensions lulled by the improvement that may occur under the use of the measures which he employs. It has been very wisely observed by Mr. Twining (i. 225), that, "in almost every case of acute hepatitis, the more urgent symptoms are mitigated long before the internal disease is completely subdued. The history of a large proportion of the abscesses of the liver that prove fatal, would show us a remission of acute symptoms, after a few days of very judicious treatment; which remission appears to have occasioned a deviation from a proper course, both in diet and medicine. A gradual return of an unfavourable state is the consequence, and a more intractable disease becomes established, although the symptoms are usually more slow and less urgent than at first; but the result is the loss of the patient's life. Even where the early treatment of a severe case has been exceedingly deficient, a deceptive cessation of acute symptoms sometimes occurs at a particular period of the disease, and that is at the time when inflammation and vascular engorgement have gone on until effusion or interstitial deposit has taken place; the morbid tension of the vessels is thereby much decreased, and an incautious person is led to remit his attention just at the moment that the utmost vigilance is requisite, and, in fact, when the greatest science and skill can hardly save life." "The tendency to relapse in hepatitis," Dr. Malcolmson remarks, "is very great; if, indeed, the cure be not often merely apparent, and subsequent attacks are, in general, attended with similar symptoms to those of the first, showing that the injured part continues for a long time liable to suffer from the slightest

causes of disease. A large proportion of abscesses in the liver take place in the situation of former attacks of hepatitis, or as a consequence of them, few cases with acute symptoms terminating in abscess on the first admission into hospital." (E. M. S. J. lii. 368.)

SIXTH INDICATION,

TO PROMOTE THE RE-ABSORPTION OF SOLID DEPOSITIONS.

475. When solid matters, foreign to the natural structure of the liver, have been deposited in that organ, interstitially or in masses, so as to produce its various forms of induration and enlargement (105, *seq.*), what expectations are we warranted in entertaining of these matters being re-absorbed into the system, — either by the unassisted efforts of nature, or under the influence of remedies, internal or external, — so that the organ shall be restored to a healthy condition?

476. There are few questions in therapeutical science in a more unsatisfactory state, than what relates to the extent of the power of medicine in producing the removal of substances deposited, in the progress of disease, in the various textures and organs of the body. The medical systems, during the prevalence of which the terms of resolvent, deobstruent, and fundant medicines were invented, have passed away, and the particular facts which led to the recognition of such therapeutical agents as were meant to be designated by these terms, though not rejected as erroneous, do not seem as yet to have been satisfactorily incorporated in the prevailing systems of modern times.

477. Surgeons know, by daily experience, that swellings of lymphatic glands situated near to the surface of the body, as those of the neck, the axilla, and the groin, as well as enlargements of the external secretory glands, as of the mamma and testicle, in many instances gradually diminish, and finally disappear, either spontaneously or under various modes of treatment. In a large proportion of the cases in which such favourable changes occur, there can be no doubt that the enlargement depends upon chronic inflammation, modified frequently by a scrofulous constitution. But whether this be invariably the nature of the enlargements of external organs which undergo resolution, or what forms of new or morbid growths, organised or inorganised, mild or malignant, occurring in the same organs, are susceptible of re-absorption, so as that the organ or texture may regain its natural dimensions at least, if not its healthy structure, is a point far from being satisfactorily determined.

478. The possibility of causing the restoration to a healthy condition of external parts that have taken on the state of scirrhus or carcinoma, by the administration of internal remedies or the use of

external applications, and of thus superseding the necessity of many surgical operations, is an idea too agreeable to the humanity, too flattering to the vanity, and too promising for the interests of medical men, to be readily abandoned. And if hemlock, nightshade, and aconite, with mercury and arsenic, have fallen from the lofty position of specific remedies in cancerous diseases which they once held in the estimation of medical practitioners, the carbonate of iron, iodine, and pressure may be considered as having, in some degree, succeeded to their honours.

479. But if, in recent times, the number of surgical operations, in cases of enlargements of the organs to which we have referred, has been diminished, we suspect that this is attributable, partly to the evidence which morbid anatomy has supplied, that many of the swellings which used to be regarded as of a malignant character, are merely the products of chronic inflammation, and, as such, susceptible of resolution; and partly to a more correct knowledge of the cases of malignant growth, in which operation is likely to be prejudicial rather than advantageous. Little influence, we fear, in producing this result, can be attributed to greater efficaciousness on the part of the remedies which are now employed with a view to promote the re-absorption of morbid growths, as compared with those which were formerly in vogue.

480. It is obvious, that whatever uncertainties attend our judgments as to the possibility of the resolution of particular forms of structural degeneration when occupying external parts, these difficulties must be greatly increased when we come to pursue a similar inquiry with regard to internal organs like the liver. Of the great effects which medicine has had in reducing enlargements of this organ, many testimonies are to be found in the records of medicine; but whether, in any of these cases, the affection causing the swelling was different from vascular turgescence or chronic inflammation, — whether, for example, any case of granular degeneration or cirrhosis of the liver, or of its fatty degeneration, or of its occupation with cancerous matter, has ever undergone spontaneous recovery, or been restored to a healthy condition by the powers of medicine, — are matters respecting which, we believe, our only information is of the nature of conjecture.

481. Since *Iodine* came to enjoy so high a reputation for its powers in causing the removal of morbid structures seated on the outer parts of the body, and the restoration of the diseased organ to a healthy state, fond anticipations have been entertained of benefit to be derived from its use in cases of enlargement of the liver. The results obtained by different practitioners from the use of this medicine, however, do not seem to have corresponded. Dr. Abercrombie mentions that, in several cases of chronic affections of the liver accompanied by jaundice, he has seen very good effects from the external use of iodine in an ointment containing half a drachm to an ounce of axunge. (P. 360.) A favourable statement of its efficacy in this class of cases has also been given

by Dr. Milligan (Lond. Med. Phys. Journ., 1828) and others. Mr. Twining, on the other hand, states (Calcutta Trans. vi. 387) that, as far as he has been made acquainted with the effects of iodine administered in chronic hepatic disease, that practice appears to have been remarkably unsuccessful; and he points out an effect arising from its administration in other complaints, which renders it necessary to be particularly cautious in employing it in affections of the liver. Out of twenty-three Europeans for whom he had prescribed it internally, for the cure of various diseases not considered hepatic, five became affected with pain in the right side. "The observations of our professional brethren in Europe," observes Mr. Twining, "afford reason to believe, that iodine, administered in large doses, is liable occasionally to excite pain in the region of the liver; and, in some instances, the existence of hepatitis, in such cases, has been proved by post-mortem inspections. Dr. Christison alludes to two instances (reported by Rust and Zinc), in which hepatitis occurred in persons who had recently taken large doses of iodine, and thinks it is not impossible that iodine possesses the power of inflaming the liver." A reviewer in the British and Foreign Medical Review, in referring to these observations, remarks, "Experience varies greatly on this point. A case recently fell under our own observation, in which the employment of iodine for chronic enlargement of the uterus was followed by acute pain in the hepatic region, extending thence to the right shoulder, and requiring the free application of leeches and mercurial purgatives for its removal. On the other hand, a chronic enlargement of the liver, to such an extent that the organ extended below the umbilicus, the sequel of remittent fever in a youth of seventeen, was entirely dispersed by frictions with a strong ointment of iodine and a course of purgatives." (iii. 354.)

SEVENTH INDICATION,

TO IMPROVE THE GENERAL HEALTH.

482. In the chronic forms of biliary, as of other diseases, whether assuming a dynamical or a structural character, there can be little doubt that a large share of the benefit which the patient can derive from medical management, must depend, not so much on the administration of courses of medicines, however ingeniously combined or varied, as on the due regulation of what we have not yet any better name to designate than the non-naturals, viz., the diet, the evacuations, the clothing, the exercise, and the occupations of the patient.

483. With respect to the regulation of the *diet*, there are obviously two precautions of great importance to be attended to, 1st, That in respect of quantity and of quality it shall be such as to be of easy digestion; and, in the 2d place, where there is any tendency

to febrile action, that it shall be of a strictly antiphlogistic character. With a view to the first of these objects, everything unsuitable for a weak or dyspeptic stomach ought at once to be discarded; and, with a view to both objects, the farinaceous substances of which, during the progress of acute attacks, the nourishment must mainly or solely consist, should continue to form a large proportion of the diet in the more chronic stages of the disease. With this may be combined a due proportion of milk—to which, if necessary, to make it agree with the stomach, fifteen or twenty drops of the aqua potassæ, or, in place of this, a fourth or third part of lime-water may be added; at dinner-time a small quantity of soup, or a bit of plain-dressed animal food may be substituted for the milk. Where it seems desirable to make some stimulant addition to the patient's drink, a little white wine and water, or, probably in most instances still better, a proportional quantity of spirits and water, are the most expedient forms in which it can be administered.

484. On every consideration, the maintaining an *open condition of the alimentary canal* by laxative or purgative medicines, in such quantities as may be required to effect the purpose, is a matter of primary importance in the treatment of the diseases of the biliary organs, both dynamical and structural. If the bile is deficient, we may suppose the purgative to act beneficially by supplying its place, and possibly by promoting its secretion. If the bile is in excess, or of a vitiated quality, a laxative, combined with plentiful diluents, will enable the bowels to throw off, in a small number of motions, and with comparatively little uneasiness, matters which, if left to themselves, would probably occasion frequent and painful purging. It is not smart purgation, as in the case of inflammatory affections, that we mean here to recommend, but merely a gently open state of the bowels, the regular maintenance of which will, we believe, in most cases of chronic affections of the biliary organs, be found to require the aid of laxative medicines. The articles to be employed for this purpose, and the length to which their administration should be carried, are points which must be left to the discretion of the practitioner, guided by the previous habits of the patient, and the visible effects which they produce.

485. *Warm clothing* is at all times an object of primary importance in the treatment of chronic diseases, as, by favouring the course of the circulation to the extremities and surface of the body, it diminishes the risk of the supervention of an acute attack upon a chronic affection, which there is at all times so much reason to apprehend. It is beneficial, also, with a view to the promotion of digestion, for the stomach, as Dr. Saunders remarks, “is greatly assisted in its energy and power by warm clothing, especially on the lower extremities of the body.”

486. The observations which we had occasion to make (214) on the prejudicial operation of habits of bodily inactivity upon the biliary organs, suggest the propriety and importance of attention to *exercise* in the treatment of their chronic affections. It is not

necessary to enter here on a consideration of the most advantageous modes in which exercise may be taken in such cases, since this is a point which must be determined not only by the means of the patient, but by his particular condition at the time, in respect of strength, &c. Exercise of the more active kinds will, of course, be best adapted for diseases of a dynamical, and those of a more passive nature for diseases of a structural character. It is in cases of dynamical deficiency of bile, probably, rather than of that dependent on structural alteration, that a sea-voyage has seemed to prove beneficial by contributing to restore the secretion of healthy bile.

487. When the disease has been brought on by the unhealthy character of the climate or locality, a change to a *better residence* will of course be conducive, if not essential, to recovery.

488. Of the benefits to be derived by those labouring under affections of the biliary organs, from resorting to a *watering-place*, the public has been long and is strongly convinced; and the general prevalence of the belief may probably be admitted as sufficient evidence of the fact. But what portion of the benefit actually derived depends on the superiority of the natural mineral waters over any imitation of them that can be made, or over other medicines of like quality; what share is attributable to the more regular use of medicines of this kind into which patients are led; how much depends on relaxation from business, or removal from causes of anxiety; how much on the regular habits of life which are generally pursued in such places; how much on change of air, or on the exercise which forms a part of the system of regimen,—are points which, in individual cases, it is often extremely difficult to determine, and respecting which no universal conclusions can be established.

489. The mineral waters in this country which have enjoyed most reputation for their beneficial effects in diseases of the biliary organs, are those of Bath and Cheltenham,—the former a chalybeate of high temperature, the latter a combination of saline and chalybeate.

490. The virtues of the Bath waters in jaundice, particularly as arising from biliary concretions, and in obstructions of the liver, were duly insisted upon by Dr. William Falconer, who long practised in that city, in his various treatises relative to these waters, published from 1770 to 1790. Their beneficial operation, Dr. Falconer attributed partly to their diluent, partly to their diuretic, partly to their antispasmodic, and partly to their stimulant powers.

491. Dr. Heberden, in his *Essay on Diseases of the Liver* (Trans. Coll. Phys. ii.), had observed that “the waters of Bath have some credit of being serviceable in a jaundice. But it must be observed, that icteric patients generally recover, wherever they are; and it may be doubted whether they recover the sooner from the use of these waters. However, there can be no medical reason

for dissuading any one, in a simple jaundice, from going to Bath ; because the waters are perfectly safe, and the proper medicines may be taken there, as well as anywhere else ; while the vacancy from care in such public places, together with the change of air, and water, and objects, may be of some use to the general health, and thereby facilitate the cure of this, as they often do of many other chronic disorders."

492. Dr. Falconer was not satisfied with this estimate of the influence of the Bath waters in curing the form of jaundice dependent on obstruction of the gall-ducts by biliary concretions. Whilst admitting that they do not exert any solvent effect, he attributes great efficacy to them in promoting the expulsion of gall-stones. "I believe," says he, "that more gall-stones have been observed to be voided during a course of the Bath waters, than of any other known medicine."

493. With respect to the employment of the Bath waters in the organic diseases of the liver, Dr. Heberden had observed ; "Bath waters are in no cases more useful than in remedying many of the injuries done to the constitution by drunkenness ; but where the liver has become scirrhus, and an hectic fever shows these scirrhi to be in an inflamed state, there the Bath waters will aggravate all the symptoms, and contribute no otherwise to end the disease than by hastening the patient's death."

494. Dr. Falconer seems to have admitted in respect of what he termed obstructions of the liver, that it is in the beginning of the disorder, before any inflammation or confirmed obstruction has taken place, that benefit is to be expected from the use of Bath waters. In his dissertation of 1790, which may be considered as embodying the results of his own personal experience, he says : "In liver complaints that have proceeded no farther than a simple obstruction of the biliary ducts, whether contracted in hot climates or at home, the Bath waters are likely to be of service ; but I apprehend most of those that are produced in hot climates are of a more complicated nature, and too deeply rooted to be safely treated by *any medicines that excite the circulation*. This, however, is conjecture only, and should not absolutely determine against a cautious trial of their effects, provided that no internal hardness be sensible to the touch, and fixed inward pain, soreness, or tendency to fever, be not among the symptoms."

495. Respecting the influence of the waters of Cheltenham over the diseases of the biliary organs, the most authentic information which we possess is that furnished by Dr. Saunders in a memorandum of date 12th December, 1802, prefixed to the third edition of his work on the diseases of the liver. "During a short residence at Cheltenham, this summer, the author was consulted by many invalids ; and had an opportunity of conversing with others, who were under the use of the purgative saline waters of that place. He soon perceived that they were very indiscriminately used in a variety of opposite diseases ; and that their effects were such as

might have been expected from so injudicious an application of their medical powers. The cases in which they appear to be useful are evidently connected with a turgescence and congestion of the hepatic system in full and oppressed habits, where the secretion of the bile is inconsiderable, and where the habit is costive.

“They are of more use in sanguineous constitutions than in pallid and chlorotic habits.

“In diseases of simple dyspepsia, with flatulency and acidity, and in cases of indurated and scirrhus livers, he has not perceived any useful operation from them.

“They are chiefly useful when their purgative operation is such as to relieve from a sense of distention immediately consequent on their being taken into the stomach; they lose their effect by daily repetition, and ought frequently to be alternated with other purgatives, or aided in their operation by other means. In very delicate exsanguine chlorotic habits, he found the purgative plan universally improper; and in such cases recommended a chalybeate spring lately discovered at Cheltenham, from which the greatest advantage was derived. He met with many persons who had returned from the East and West Indies with very torpid bowels and diminished secretion of bile; in such cases, the purgative water was useful, and may be proper as preparatory to the future use of a more tonic plan of treatment.

“The daily exercise and general habits of temperance practised at Cheltenham, contribute not a little to promote the recovery of such invalids.

“In irritable and feverish habits, with thirst and general languor, evidently arising from some local and visceral affection, the waters of Cheltenham are less calculated to do good. In cases of jaundice, from some resistance to a free discharge of bile, and a sense of heat, distention and fulness, increased soon after eating, the Cheltenham water is useful. In cases of jaundice from gall-stones, also, it is useful, but should be drank warm.

“In calculating the number of persons, and the variety of disorders among the invalids at Cheltenham, he thinks he may fairly conclude that one-third of the whole was benefited, one-third derived no advantage, and the other third was evidently hurt by persevering in the purging plan. Among the last cases symptoms of languor, flatulency, thirst, and debilitated digestion were induced, or much increased.”

EIGHTH INDICATION,

TO GIVE VENT TO PRETERNATURAL COLLECTIONS OF FLUID.

A. Opening of Abscesses.

496. When the practitioner is made aware of the existence and of the seat of a hepatic abscess (76), by the supervention of the general symptoms indicative of suppuration (401, 409, *seq.*) and by the sense of fluctuation (311), is it his duty to proceed to give vent to its contents? If he does not, one of several occurrences may take place; 1. Perhaps the contents of the abscess may be re-absorbed, and the patient recover his health. (81.) 2. The patient may die of the progress of the disease, without any evacuation of the contents of the abscess. 3. The abscess may discharge itself into the cavity of the peritoneum. (85.) 4. It may establish a communication with some hollow organ and be discharged. (89 to 97.) 5. It may point and burst externally. (88)

497. The possible occurrence of the second, and particularly of the third of these events, is a strong inducement, unless there be countervailing reasons, for giving external vent to the contents of an abscess whenever this is practicable. Indeed, to justify us in abstaining from doing so, it would be necessary to show that the risk of the occurrence of either of these two modes of termination is very small, and that those included under the fourth and fifth heads are attended with less danger than operation.

498. Different practitioners have held out different estimates of the success which has attended the artificial opening of hepatic abscesses. Mr. Curtis mentions (p. 100), that, in the year 1782, out of ten patients in whom such abscesses were opened in Madras Hospital, only two were saved; and that, in the summer months of 1783, a still greater number underwent this operation, and only three or four were recovered by it. Dr. O'Brien, from the results of some cases which fell under his observation, is disposed to conclude that where the abscess is not confined merely to the investing membranes, but involves the substance of the liver to any extent, it is probable an operation will never succeed; and he thinks it is doubtful whether it does not hasten the patient's death, as the sanious unhealthy discharge is likely to become more acrid by the admission of air to the cavity of the abscess. (Trans. Assoc. Phys. in Ireland, i. 54.) Mr. Marshall thinks it is only when the abscess is small that a recovery can, with any degree of confidence, be expected from affording a passage to its contents externally (p. 150); and Sir George Ballingall states, that although he had, in several instances, opened abscesses of the liver, no one of his

patients had eventually been restored to permanent health.* — (P. 102, 109.)

499. A more favourable estimate of the advantage to be derived from the practice of opening abscesses of the liver, was formed by the late Dr. James Clark of Dominica. (Medical Commentaries, xiv. 317.) He had performed the operation on thirteen patients, "all," says he, "that have fallen under my care, or, at least, all whose consent I could obtain to have the operation performed on them." In eight of these, the recovery was complete. In two, death was caused by other diseases, dysentery and fever, supervening at sufficiently long periods after the operation to show that its results would otherwise have been advantageous; so that in three only did death occur in consequence of the progress of the disease for which the operation was performed; and in none does it appear, that the fatal termination was promoted or accelerated by the measure. Dr. Clark expresses his conviction that, where there is a single abscess, and that is opened early, or as soon as a fluctuation of pus can be discovered, even if the patient be considerably emaciated, there is the greatest reason to expect his recovery; and he states, that he never knew any person recover after the abscess had burst.

500. Baron Larrey gives a very favourable report of the success of the practice of opening hepatic abscesses in Egypt. After detailing three cases of cure, he says, "From ten to twelve similar cases have presented themselves in the same hospital, and the disease has had the same favourable termination. Several persons having refused to allow these hepatic collections to be opened, have died from the effects of the disease. Those who have been operated on in time have been perfectly cured." (*Mem. de Chir. Milit.* ii. 51, 54.)

501. Many individual cases have been recorded in which hepatic abscesses have, in temperate climates, been successfully opened. It may be feared, however, as Dr. Malcolmson suggests, that the

* Dr. Malcolmson mentions (*Med. Chir. Trans.* xxi. 101), as a circumstance which greatly diminishes the chance of a successful result from operation in hepatic abscesses, the fact that, in consequence of the tendency of the liver, when enlarging, to encroach on the cavity of the chest, abscesses in that organ are very liable to cause adhesion of the diaphragm to the costal pleura, and then to make their way through that muscle and the intercostal spaces to the surface. For, owing to the great thickness of the parts through which the matter has, in such cases, to pass, it generally happens that, before it can be reached, it has extensively wasted the substance of the liver, and, by burrowing through its softer parts, has produced irregular cavities, that are usually crossed by bundles of vessels and membrane, with portions of hepatic substance. But, even under these circumstances, Dr. M. conceives that, as adhesion has always taken place previous to fluctuation being perceptible, the operation may be performed without danger, and should on no account be deferred. Dr. Malcolmson by no means agrees in Dr. O'Brien's "sweeping inference, that an abscess affecting the substance of the liver will never be cured by operation; and that all the successful cases on record have been abscesses of the peritoneal coats; a form of disease," he adds, "far more rare than the remarks of Dr. O'Brien, &c. would lead us to believe." (*Edin. Med. Surg. Journ.* lii. 378. See also p. 381.)

unsuccessful ones too often remain unpublished. What influence may climate and previous mode of treatment (particularly as regards the practice of blood-letting, and the administration of mercury) be supposed to exert over the issue of cases in which this operation is performed?

502. We have seen (84 seq.) that, in a considerable proportion of cases of abscess of the liver, no adhesion takes place between its coats and the parietes of the abdomen. This fact suggests several inquiries connected with the operation which we are considering; 1st, Have we any means of distinguishing between the cases in which such adhesions do, or do not exist? 2d, Is the non-existence of such adhesions, supposing it to be ascertainable, a positive contra-indication to the operation of opening a hepatic abscess? And, 3d, Have we any means of bringing about adhesions, where they do not exist, previously to opening such an abscess?

503. (1st.) According to Mr. Annesley, when adhesions have not formed, although a circumscribed tumour may point outwardly, there will seldom be much redness of its external surface; such an appearance always indicating that adhesions have formed, or are far advanced in the process of formation. When this external redness is observed, with diminution of that surrounding fulness which accompanies the formation of the abscess, and with fluctuation of matter in the tumour, then the operation may be undertaken, Mr. Annesley conceives, with every prospect of success. Mr. Marshall mentions that, in some cases of abscess of the liver occurring in Kandy, in which, in consequence of a bulging appearance under the false ribs of the right side, it was supposed that a considerable adhesion might have taken place between the liver and the parietes of the abdomen, dissection after death invariably showed that the connection was not sufficiently intimate to render an operation for evacuating the contents of the abscess successful. (P. 150.) "Mr. Hawkins," says Dr. Malcolmson, "thinks that the fear of adhesion not having formed when abscess of the liver appears externally, deserves little consideration; but my own experience has furnished me with several striking examples in which fluctuation was very perceptible, without adhesion having taking place, or the matter being in contact with the abdominal parietes, and in three instances the tumour was defined, somewhat pointed, soft in the centre, and surrounded by a hard margin." "When the skin is red at the most prominent point," adds he, "no danger need be apprehended."* (Edin. Med. and Surg. Journ. lii. 391-2.)

504. (2d.) Mr. Annesley lays it down as one of the rules relative to the opening of a hepatic abscess, that it should not be done before the part at which it points has formed adhesions to the opposite part of the abdominal parietes. Dr. Malcolmson thinks that, notwithstanding the opinions of several authors to the con-

* Clinical Remarks on some Cases of Liver Abscess presenting Externally, by John G. Malcolmson, M.D., published in the *Select Medical Library*, for January, 1840, p. 43.

trary, it is impossible to believe that, when there exists no adhesion of the covering of the abscess to the parietes of the abdomen, the pus would not, in the event of an operation being performed, be effused into the cavity of the abdomen, and destroy the patient. (Med. Chir. Trans. xxi. 103.)

505. But in taking a review of the cases on record in which hepatic abscesses have been artificially opened, we find little reference, on the part of those who relate them, to the question whether or not there existed, previously to operation, adhesions between the surface of the abscess and the abdominal parietes. And, notwithstanding the apparent inattention to this point, there is no evidence of the contents of the abscess having, in any of these cases, escaped, subsequently to operation, into the cavity of the abdomen. To say nothing of the considerable number of recoveries that are related as having occurred after the opening of hepatic abscesses, it appears that, even in those cases in which death has taken place, it was attributable rather to the advanced state and the extent of the disease than to any prejudicial effect induced by the operation. We confess, therefore, that we entertain considerable doubts (doubts which are participated in by Mr. Marshall from reflection upon his own observations), as to the validity of those apprehensions so strenuously urged by Mr. Annesley and Dr. Malcolmsen respecting the necessary escape, into the peritoneal cavity, of the contents of an abscess, not adherent to the parietes, on its being artificially opened. We may observe, that Dr. Clark of Dominica mentions expressly that, in one of his cases (the third), the liver did not at the time of operation adhere to the peritoneum as usual, in consequence of which, after making some fruitless attempts to get the orifice in the liver to correspond with that in the abdomen, he was obliged to make a second incision into the liver, more than an inch deep, before he reached the abscess. Six days after, he found that the liver adhered to the peritoneum all round the orifice.

506. Since the doubts expressed in the preceding paragraph presented themselves to our mind, we have had an opportunity of seeing some of the numbers of the Madras Quarterly Medical Journal, which had not previously fallen under our notice; and from these we find, that the question as to the safety of opening hepatic abscesses previously to the formation of adhesions, has been attracting much attention amongst the medical gentlemen of that presidency, since the arrival of Deputy-Inspector Dr. Murray from the Cape of Good Hope.

507. In the third number of that Journal for July, 1839, after communicating a case of hepatitis terminating in suppuration, without peritoneal adhesion, in which he punctured the abscess at an early stage, and with successful results, Dr. Murray states, that he has opened many hepatic abscesses, where no adhesion existed between the liver and external parietes, and in a good many instances the patients recovered, and in none did any matter escape into the peritoneal cavity after the operation, an occurrence of

which surgeons are so much afraid.* "The escape of matter seems," he says, "to be prevented by the constant state of apposition of the viscera in all their parts." "If the abscess be not very extensive, and if the operation be performed before the patient's constitution begins to break up, I consider that there is a good chance of success; and, under any circumstances, the introduction of the trochar into the parenchyma of the liver seems to do no serious harm, even if we miss the abscess. The point to be considered before operating is, whether the patient appears to have any fair chance of cure by a natural process, as by absorption, or rupture into the alimentary canal; if not, I think the abscess should be punctured forthwith, and the chief precaution required is to avoid the gall-bladder."

508. In the succeeding number of the same Journal (October, 1839), in which several other cases are related illustrative of the safety and advantage of the early puncturing of hepatic abscesses, Dr. Murray says; "I believe it is now the opinion of most, if not all, the Queen's medical officers in this command, that the sooner an abscess in the liver is opened after its existence and site are ascertained, the better; and that there is neither much danger of effusion of the matter into the cavity of the peritoneum, even when no adhesion exists between the liver and external parietes, nor of hemorrhage from cutting pretty deeply into the substance of the organ, unless the operator be so ignorant and rash as to plunge his trochar into the large vessels situated near to the back-bone. Surely the earlier the abscess is punctured, the better the condition of the liver and of the patient's constitution will be to institute the desirable process of adhesive inflammation and cicatrization, and the less degree of collapse and recession of the viscus there is likely to be from the parts naturally in apposition to it. I must further mention, that, from two cases lately reported to me, I have strong reason to believe, that in hyperemia, hypertrophy, or inflammatory enlargement, the liver may be punctured, and blood thus abstracted from it (as the natives do in cases of enlarged spleen, a much more vascular organ), not only with perfect safety, but with singular advantage." Hence Dr. Murray conceives, that where doubts are entertained as to the existence, or as to the precise seat, of hepatic abscess, the surgeon need have no scruple in puncturing the liver with a suitable instrument, for the ascertainment and determination of the point or points in doubt.

509. In the 6th No. (April, 1840), which contains several additional cases confirmatory of the same practice, Dr. Murray resumes his observations. (P. 238.) "There is at present," says he, "too great reluctance on the part of most practitioners to explore en-

* The editor of the Journal, Mr. Rogers, mentions his having "seen an officer just returned from the Cape, in whom Drs. Murray and Abercrombie punctured a large hepatic abscess last year, when no adhesion existed between the liver and external parietes, and the operation proved perfectly successful."

larged livers, even when there are strong characteristic symptoms of existing abscess, from apprehension of danger in the operation. A deterring story is told here of a patient once dying of a hemorrhage, in consequence of a trochar having been pushed into his liver; but I can call to mind seventeen cases, within the last few years, wherein I performed this operation without any bad consequences, by which six of the patients were recovered, and are alive at this day I believe. I consider that, with a good anatomical and pathological knowledge of the region in our mind's eye to enable us to avoid the large hepatic vessels, the gall-bladder, the colon, and the stomach, there is abundance of evidence to authorize us, nay, that it is our bounden duty, to explore the liver without hesitation or delay, in most cases where pathognomonic symptoms of abscess in it exist, and the disease is interfering seriously and prejudicially with the functions of the organ and with the general health of the patient."

510. Dr. Horner of Philadelphia has related (*Amer. Journ. of Med. Sci.* xiv. 87) a "case of hepatic abscess in which tapping was performed before adhesion to the side had occurred," which seems well deserving the consideration of practitioners, as suggesting a mode of conducting this operation which (even admitting the apprehensions usually entertained as to the risk of opening unadherent hepatic abscesses according to the ordinary method, to be well-founded) would render the non-existence of adhesions in such cases of comparatively little importance. The following was the plan of procedure pursued on this occasion by Dr. H. "An incision was first made horizontally, on a line with the anterior end of the eighth rib on the right side, a little in front of its cartilage, and through the side of the abdomen, which brought the liver into view; the latter was seen to rise and fall with the diaphragm in respiration; moreover, a knife-handle was introduced between the surface of the liver and of the contiguous part of the abdomen. These two facts made clear the thing apprehended, to wit, want of adhesion. In this dilemma, I determined to stitch the liver to the side, which was accomplished with a large crooked needle, armed with a ligature of kid-skin of bulk sufficient to fill up the hole made by the needle. One stitch was made in this way parallel with the upper margin of the incision, at the distance of four lines from it, and another in the same manner below. The liver being thus fixed closely to the side, a trochar and canula were plunged into the abscess, and five gills of purulent matter were immediately discharged, to the great relief of the patient; the matter continued to flow during the night, so that three or four more gills were discharged. The operation being ended, a bandage was put around the abdomen, so as to keep its viscera as still as possible. The canula was left in for fifty-four hours, and then a piece of a flexible catheter was substituted, the abscess discharging all this time small quantities of pus and serum mixed." No sign of peritonitis followed this operation, and the death of the patient, which happened

on the 5th day, seemed to depend on his previous exhaustion. On post-mortem examination, it was found that an adhesion between the liver and side had occurred immediately around the puncture of the trochar, which, along with the stitches, had prevented any pus from getting into the cavity of the peritoneum, and this membrane was perfectly sound. Though life was not saved by this operation, Dr. H. considers that it holds out an encouragement for opening hepatic abscesses, even when adhesion to the side had not occurred, provided the liver be secured in the mode pursued by him, or by an equivalent process; and declares his only regret, after a deliberate review of the case, to be, that he did not resort to this treatment when the abscess first fluctuated. Dr. Malcolmson, in referring to the American Quarterly Journal of Medical Science, says, "An American author has published some cases in which he punctured hepatic abscesses, and finding no adhesions, stitched the liver to the side; and even recommends the practice to be adopted whenever fluctuation is discoverable. It is needless to object to such barbarous practice: but the cases show that the fear of opening such abscesses previous to adhesion having taken place, is far from imaginary." (Edin. Med. and Surg. Journ. iii. 392, note.) We have not happened to meet with any other case in which the practice in question has been pursued besides the one which we have quoted from Dr. Horner; and we cannot admit the applicability to it of the harsh expression of *barbarous*. By that term, as applied to a surgical operation, may be understood one that unnecessarily exposes the patient to an intense degree of suffering, or one that is obviously founded on unscientific principles; and there is certainly nothing in the relation of Dr. Horner's case to lead us to impute to it either of these characters.

511. (3d.) But, whatever foundation there may be for Dr. Murray's views respecting the safety of puncturing unadherent hepatic abscesses, or whatever be the merits or demerits of Dr. Horner's plan of operation, it would unquestionably be desirable to secure, if possible, the existence of adhesions, before the operation of opening a hepatic abscess be commenced.

512. Two modes of opening hepatic abscesses have been recommended, as calculated to increase the chance of adhesions taking place previously to the discharge of their contents. One of these is the application of caustic potass, a method pursued long before the existence of adhesions became an object of consideration. Respecting this method, however, Mr. Twining gives the following testimony. (i. 302-3.) "When patients would not permit the abscess to be opened by incision, I have, in many instances, applied the potassa fusa to the most prominent part of the tumour, but do not consider that any benefit has been derived from attempts to open the abscesses in this way. On inspecting the bodies of these subjects afterwards, adhesions of the peritoneal coat of the liver to the parietes of the abdomen have very rarely been found."

513. Drs. Graves and Stokes observe, respecting the mode of opening hepatic abscesses by caustic, that it is so tedious, that, before it effects our object, the abscess will probably have enlarged to a fatal extent; nor does it, as was supposed, insure the formation of adhesions, a fact established, they conceive, by a case which they have related. (Dubl. Hosp. Rep. v. 106.) None of these authors have alluded to an effect of the application of the caustic which had forcibly struck Dr. Dick, and with the importance of which, from what we have seen in respect of abscesses seated in other parts of the body, we are strongly impressed. Dr. Dick told Mr. Abernethy and Sir C. Bell, in consultation on a case of lumbar abscess, that, in his practice in India, having under his care a case of abscess of the liver, pointing outwards, he wished to open it gradually, and for this purpose had applied caustic; but instead of finding that he attained, in any degree, his object of opening the abscess, he soon discovered that it was lessening, and that its walls had become much thickened. In short, the matter was absorbed, and the patient restored to health. Other cases of similar success followed, and he was thus led to consider severe counter-irritation as a most important means of producing the re-absorption of matter. (Treatise on Diseases of the Liver, by George Hamilton Bell, Esq. 1833, p. 47.)

514. The second method of opening hepatic abscesses, with a view to produce adhesions previously to the discharge of their contents, which was proposed by Dr. Graves, is that of making an incision of some length through the integuments, over the most tumid part of the hypochondrium, dividing some layers of muscle, and keeping the wound open by plugging it with lint. (Dubl. Hosp. Rep. iv. 39.) This practice, Mr. Twining says (i. 302), will assuredly be followed by the adhesions required, and it may also solicit the advance of the abscess towards the part where the incision is made in the parietes of the abdomen. Mr. Twining, however, mentions no cases in which he had reason to believe adhesions actually to have been produced by this plan of opening hepatic abscesses. Drs. Graves and Stokes state, that, in a case in which they had recourse to it that terminated fatally, though there were several superficial hepatic abscesses, no adhesions had formed except immediately below the incision. (Dubl. Hosp. Rep. v. 107.) In a case described by Dr. Malcolmson, in which it was practised, on opening the body after death, it was found that no adhesion had taken place between the abscess and the parietes of the abdomen. (Med. Chir. Trans. xxi. 97.) We suspect that the proofs of the efficiency of this mode of opening hepatic abscesses, in producing adhesions, remain still to be collected.

515. A variation on this plan of procedure has been proposed by M. Begin, who recommends that in all cases of collection of fluid in the abdominal cavity, in which, from the absence of swelling of the integuments, of greater or less extent, deep, and accompanied by heat and pain, we have not a certainty of the existence

of adhesion to the abdominal parietes, the operation for opening such collections should be performed in the following manner. An incision should be made, with due caution, down to the peritoneum; this membrane should be raised with a pair of forceps, and divided, as if it were a hernial sac that was the subject of operation. An opportunity will then be afforded of ascertaining whether the sac containing the fluid adheres to the abdominal parietes, or whether they move freely on each other. In the former case the operation may be at once completed by opening the sac and giving vent to its contents. In the latter case, by applying simple dressings to the wound, adhesion will be established in the course of a few days, and the operation may then be proceeded with. (*Journ. Hebdom.* 1830, i. 417.)

516. Sir George Ballingall conceives (p. 109) the introduction of a seton to be by far the most advantageous mode of opening abscesses in the liver, when they point externally; but we do not find that he has anywhere explained the grounds of this preference; whether he supposes that it increases the probability of adhesion taking place, or that it tends to prevent the immediate escape of the contents of an abscess, where adhesion does not exist, into the cavity of the peritoneum.

517. Such are the various plans that have been suggested for obviating the evil consequences that might arise from the opening of hepatic abscesses, in cases in which they have not formed adhesions to the abdominal parietes. When we are not deterred by any doubts respecting the existence of adhesions, from giving immediate vent to the contents of a hepatic abscess, ought we to prefer, as the instrument for effecting this, the abscess-lancet or the trochar? To the use of the latter instrument, Mr. Annesley objects, that the pus, which is formed in abscess of the liver, is often full of large flakes, and sometimes contains large coagulated clots of a cheese or curd-like matter, which will not pass through the largest trochar, the more fluid portions only coming away. These clots remaining, act as foreign substances in promoting continued suppuration of the organ, and febrile excitement of the system. The following is the method of proceeding which he has been in the habit of pursuing. "Having made the external incision large, and with caution, until the peritoneum is fully exposed, the fluctuation of the abscess will be distinctly felt. An abscess-lancet should then be introduced, and the tumour laid open to the full extent of the external wound, which ought to be from two and a half to three inches in length. Care should always be taken that the opening do not extend beyond the limits of the adhesions which have been formed. The purulent collection being fully evacuated, the cavity should be filled with lint, which gives a mechanical support to the excavated parts, and the wound dressed with compresses and bandages in the usual way." In reference to these directions, Dr. Malcolmson observes, that "where the matter presents itself between the ribs, and the opening is neces-

sarily limited by the bones, and, even when large, is often closed by the motion of the parts, this plan is not only ineligible, but impracticable; and even in a case similar to the successful example published by Mr. Annesley, I believe the extensive incision necessary to lay open an abscess of any extent, would be attended with no advantage equivalent to the risk of cutting the peritoneum beyond the incisions, and the consequent effusion of purulent matter into the abdomen." (Edin. Med. and Surg. Journ. lii. 389.) We do not find that those who have been engaged in the performance of the operation have experienced the inconveniences which Mr. Annesley suggest, from the use of the trochar.

518. "Taking all circumstances into consideration," says Dr. Murray (Madras Quart. Med. Journ., No. iv. p. 485), "I should have no hesitation in coming to a decision how to act, if a case of decided or strongly suspected hepatic abscess were presented to me for treatment. I would, in the first instance, introduce an exploratory needle, or, in preference, a very slender flat trochar, at the most bulging part of the liver; and having ascertained the existence and site of abscess, I would then make (or not? an incision through the integuments over it, down to the peritoneum or pleura (as may be), through which I would acupuncture the liver in five or six places around the prominent point, to excite adhesion between the two layers of the lining and investing membrane; and in two or three days afterwards, I would introduce a common sized trochar at this part. I have here," continues Dr. Murray, "questioned the necessity of Dr. Graves' incision; and, on mature deliberation, I regard it as superfluous, conceiving that the acupuncture alone will suffice to bring about adhesion; and the operative process thus simplified would be little painful, safe, and likely to prove frequently successful in a disease allowed to be attended with imminent danger if no operation be performed at all, or if the evacuation of the matter be delayed till the liver becomes extensively disorganised, and the patient's constitution undermined." It does not appear, however, from the reports of the cases in which Dr. Murray has operated, that he has himself had recourse to acupuncture, or to any other device for procuring adhesion, previously to the use of the trochar.

519. As to the most advantageous situation for puncturing, Dr. Murray makes the following observations (No. vi. p. 239); "I am of opinion, that all our punctures should be made from the abdominal cavity, entering the trochar or explorer under the edge of the cartilages of the seventh, eighth, or ninth ribs, as circumstances may indicate. We may often, indeed, get nearer to the abscess through one of the intercostal spaces,—and I think *primary* exploration may sometimes be advantageously made in this situation by a very minute, flat, canular instrument,—but, from not having seen any patient recover where the matter was evacuated in this direction (through the diaphragm); from finding that the action of the fibres of the diaphragm impedes the free discharge of the matter,

somewhat like a valve ; from observing that air sometimes enters the wound when made here ; and from considering that the opening is not so dependent through the walls of the thorax, as when made through the abdominal parietes, I beg to recommend the latter mode in *all cases*, and I must also say that I would prefer a long trochar to any other instrument, as the stilette can be withdrawn occasionally during the operation, to ascertain if any abscess has been penetrated ; and the canula can be left *in situ* afterwards, if thought desirable.”

520. Before quitting the consideration of the surgical operations for hepatic abscess, it is proper to remind the practitioner that in that class of cases in which the contents of such an abscess find their way through the diaphragm into the cavity of the pleura, so as to produce empyema, it may be necessary to have recourse to the operation of paracentesis thoracis.

B. Opening of Serous and Hydatid Cysts.

521. We have in the next place to inquire how far the opening, by surgical operation, of serous and hydatid cysts imbedded in, or attached to, the substance of the liver (117), is a safe or expedient practice. Each of the two forms of tumour, the simple cyst and the hydatid, it must be kept in mind, may exist in two different conditions — the uninfamed, or the inflamed and suppurating.

522. M. Lassus, in some researches and observations upon encysted dropsy of the liver, under which term he seems to have included both simple and hydatid cysts, expressed himself strongly against the expediency of operation in such cases. “It is,” he says, “an act of unskilfulness knowingly to open a true encysted aqueous tumour ; for it is to accelerate the death of the patient, the detersion, the destruction, or the excision of the cyst being absolutely impracticable by any procedure whatsoever.” (*Journ. de Med. par Corvisart. &c.*, i. 115., and also *Pathol. Chirurg.* i. 279.). More recently M. Cruveilhier has collected a number of cases (many of them the same as had been previously adduced by Lassus in his memoir) in support of the assertion, that, almost invariably, death has closely followed the artificial opening of acephalocyst tumours of the liver. (*Dict. de Med. et Chir. Prat.*, art. *Acephalocystes.*) It seems deserving of consideration how far this calamitous result is attributable to the fact noticed by him, that practitioners, from being unacquainted with the nature of the organic lesion, have in many instances, after opening the tumour, proceeded in the subsequent treatment as if at hazard, without rule and without principles.

523. The inducements to evacuate the contents of such tumours by operation, may be either, 1st, To obviate mischief which may eventually arise ; as from their suppuration, or from their rupture, spontaneously, or in consequence of violence, into the cavity of

the peritoneum, or in some other unfavourable direction ; or, 2d, To relieve the uneasy feelings, or remove the injurious effects which they are actually occasioning.

524. On the other hand, the grounds of objection to operation in such cases, or the dangers to be apprehended from it, seem to be, 1st, the escape of the contents of the perforated cyst into the cavity of the peritoneum, in case of non-adhesion of its coats to the parietes of the abdomen ; and, 2d, the inflammation of the internal surface of the cyst, from the admission of air, to an excessive degree, or in a noxious form ; in short, those evil consequences which are very liable to result when atmospheric air is admitted into any large suppurating cavity. It is obviously, therefore, a primary question with the surgeon, how far the operation can be conducted in such a manner as to diminish or obviate the risk arising from these two sources.

525. (1st.) The same measures which have been suggested as calculated to produce adhesions of the outer surface of a hepatic abscess to the abdominal parietes (512), may be supposed capable of producing this effect in respect of a simple serous or a hydatid cyst ; and accordingly the application of caustic, once and again, for the purpose of opening such tumours, has been repeatedly practised.

526. (2d.) The modes of operation, in cases of this kind, that have been recommended and pursued in recent times, seem to have had for their more particular object the prevention of the admission of air into the perforated sac.

527. Mr. Hawkins (Med. Chir. Trans. xviii. 167) thinks himself justified in inferring from the cases in which *aqueous* encysted tumours of the liver have been successfully operated upon, that the best mode of proceeding when they are nearly uninflamed, and the cysts are thin and membranous, is to puncture them with a trochar, taking care that no undue pressure is employed, which might induce too much inflammation ; and that moderate pressure is continued during the whole time the fluid continues to flow, as well as when the canula is withdrawn, so that no air can enter the sac. If, therefore, the contraction of the abdominal muscles and diaphragm does not seem to empty the cyst readily, the use of a cupping-glass over the canula is a better mode of proceeding than using undue force with the hands. The great object after the evacuation is to heal the puncture, which readily takes place, and to keep the sides of the cyst in contact by pressure, which may be done by long straps of adhesive plaster round the abdomen, and a moderately tight bandage. But if suppuration has taken place, Mr. Hawkins thinks that after the abscess has been punctured with the trochar, a gum catheter may be introduced to give exit to the fluid which may be subsequently evacuated ; and that, after the puncture, pressure may be employed by the side of the catheter to produce as much diminution of the size of the cyst as the degree of inflammation present in the case will allow.

528. When a *hydatid* encysted tumour is to be opened, whether in a simple or an inflamed state, puncture by the trochar, Mr. Hawkins conceives, is the method to be preferred. It might, he observes (l. c. p. 171), be thought that the orifice made by the trochar would not be sufficient to give exit to the hydatids, but their figure becomes so altered, or they are so readily broken down and burst, that they will pass through a very small opening. Cases in which a complete incision with the knife has been made at once, do not seem, on the whole, this surgeon alleges, to have been so successful as when a small opening has been employed; and this can be enlarged subsequently, if it is found insufficient, with less risk of opening the peritoneal cavity than if the same sized opening be made at once. The opening having been made, and the contents of the cyst evacuated, so far as may be possible, if there is not an appearance of pus, an attempt should be made to procure its obliteration by adhesion, and if this fails, the puncture can readily be re-opened. But if the contents be at all purulent, the propriety of attempting wholly to close the orifice is much more doubtful, and it will probably be less hazardous to leave it open, lest dangerous symptoms should be produced by the confinement of matter becoming foul in consequence of the opening.

529. When a hydatid encysted tumour has been opened spontaneously, or by art, much good, Mr. Hawkins remarks, appears to have been derived, in case of the discharge putting on an unhealthy character, from washing out the cavity with warm water, or from injecting into it some gently stimulating applications, a short time after the first opening had been made. This practice, Mr. Hawkins thinks, induces a more healthy secretion in the cyst, and facilitates the adhesion of its sides by lymph; and it is not followed by inflammation to a hurtful extent, if proper care be taken.

530. M. Recamier of the Hotel Dieu of Paris has had occasion to operate in a considerable number of cases of simple serous or hydatid cysts of the liver; and as the results of his operations have been very satisfactory, we shall here state the method which he pursues. (Rev. Med. 1827, iii. 436.)

531. In order to ascertain decidedly the nature of the tumour, M. Recamier recommends that a small and very fine trochar be plunged into it, on the canula of which a cupping glass is afterwards to be applied, in order to draw out a little of the fluid. After having acquired a certainty of the tumour being a hydatid cyst, by the examination of the fluid discharged, caustic potass is to be applied, and at the bottom of the wound thereby occasioned, a second application of the caustic is to be made, in order to produce at once the opening of the cyst, and its adherence to the parietes of the abdomen. After the evacuation of the hydatids, the sac is to be filled with an emollient fluid, such as honeyed barley-water, and this injection is to be renewed every day.

532. M. Cruveilhier doubts whether, in the present state of

science, we should be justified even in making a puncture with a very fine trochar, into a tumour of this kind, unless it could be satisfactorily ascertained that adhesion existed, and there were a well marked tendency of the tumour to proceed outwardly. He acknowledges, however, that in five instances in which M. Recamier has employed the method described, his happy boldness (*heureuse audace*) has been justified by the most complete success.

533. M. Begin, in the memoir formerly referred to, represents the preliminary puncture as useless, because, if fluctuation be manifest, it is of little importance to know what is the nature of the fluid which the tumour contains. Whether it be pus, serum, bile, or hydatids, the indication remains the same. The necessity of operating, under such circumstances, results, not from the origin, or from the composition of the effused matters, but from the symptoms induced by the tumour, by the danger which its presence and its increase occasion to the patient; and, this being the case, fluctuation alone is sufficient to warrant its being opened. M. Begin also considers this exploratory puncture as by no means free from danger; and he regards his own mode of securing the formation of adhesions, formerly described (515), as safer and more certain than that by caustic. The observations already made in respect to the opening of abscesses (507, seq.) seem to show, that the apprehensions about exploratory punctures of aqueous or hydatid cysts in the liver are exaggerated; and perhaps also to suggest the expediency of an operation being performed, in this class of cases, at an earlier period than has heretofore been usually practised.

C. Opening of Distended Gall-Bladder.

534. In consequence of the difficulty that occasionally attends the discrimination between abscesses of the liver and distended gall-bladder (163, 312), it has sometimes happened that tumours of the latter description have been punctured by mistake. Again, when inflammation has occurred in the gall-bladder, particularly as a consequence of the existence of calculi, and suppuration has supervened, the matter has occasionally made its way, as was formerly described (152), through the parietes of the abdomen, and been discharged externally either by a spontaneous or by an artificial opening, being in some instances accompanied by one or several gall-stones. These results have suggested the inquiry, under what circumstances tumours connected with the gall-bladder, or with the gall-ducts, become proper objects of surgical operation?

535. M. Petit mentions two cases of puncture of the distended gall-bladder which proved fatal, but with few particulars. In the one case, two pints of very green and viscid bile were discharged; and in the other about a choppin of green bile. *Mem. de l'Acad. R. de Chir.* 12mo, i. 256.) In a case communicated to Mr. Andree,

p. 18, by Mr. Cline, the particulars are more circumstantially narrated:—"S. M., aged 16, had a troublesome cough for several months, attended with pain in the right hypochondriac region. On the same side, a tumour gradually formed, and distended the cavity of the abdomen; fluctuation being distinctly felt, a trochar was introduced. By this operation more than twenty ounces of bilious fluid was discharged. During the evacuation, he complained of great pain in the part, and in his right shoulder; symptoms of inflammation soon followed, and he died on the seventh day after the operation. He had been in a bad state of health about twelve months preceding his death, but without any suspicion of obstruction to the passage of the bile; for his skin had not been discoloured, nor his stools apparently altered. Mr. Cheston examined the body, and found the gall-bladder containing about two quarts of bile, extending from its usual situation down to the pelvis, and adhering to the peritoneum, omentum, and part of the stomach, all of which were inflamed. The biliary ducts were greatly inflamed, except where the ductus communis choledochus enters the duodenum, which part was contracted, but admitted the bile, with some difficulty, to be pressed into the intestine."

536. Under this head may be mentioned also, the case of a girl of 14, in whom an enlarged biliary duct was opened by Mr. Todd of Dublin (*Dubl. Hosp. Rep.* i. 325), on the supposition of its being hepatic abscess, and about two quarts of viscid green bile drawn off through a canula. The girl died on the evening of the second day; and on examining the body, a large quantity of serous fluid mixed with green bile, was discharged from the abdomen; the peritoneum was inflamed in several parts; and flakes of coagulable lymph adhered to its surface, and floated in the fluid.

537. We are acquainted with two cases only in which puncture of the gall-bladder has not been attended with a fatal result. In one of these, Petit's fourth case (*l. c.* p. 258), in which the tumour was opened contrary to his advice, on the supposition of its being a hepatic abscess, a fistula formed, from which, by dilatation, a biliary calculus was afterwards extracted. The other case is related by Drs. Graves and Stokes. The distended gall-bladder co-existed with hepatic abscess, and was punctured without injurious consequences. These gentlemen supposed that this operation had proved fatal in every instance except that which they have detailed. "Had the smallest quantity of bile," say they (*Dubl. Hosp. Rep.* v. 104, 5), "found its way into the peritoneal cavity, peritonitis must have ensued, a result most probably prevented by the existence of adhesions at the point where the puncture was made."

538. M. Petit, in reasoning on the different results of the two first cases related by him (535) as compared with the fourth (537), came to the conclusion that, to the successful issue of the operation of puncturing the gall-bladder, it is necessary that there should exist adhesion of that sac to the peritoneum, so as to prevent effusion of bile into the cavity of the abdomen; and suggested the fol-

lowing as the characters by which the existence of such adhesions and their seat may be ascertained ; viz., 1st, its being impossible to make the tumour change its position ; 2d, sponginess and redness of the integuments ; and 3d, the circumstance of there having been frequent returns of inflammation. (l. c. p. 288.)

539. M. Petit conceived that in cases of concretion in the gall-bladder, in which we are convinced, from the presence of the symptoms above enumerated, that that viscus adheres to the abdominal parietes, an operation may with propriety be performed for the extraction of the concretion. (l. c. p. 290.) But it does not appear that any of the cases related by him, for the purpose of showing the possibility and propriety of such an operation, were independent of abscess of the abdominal parietes. He himself obviously requires *sensible fluctuation* as a condition of operation.

540. "Lithotomy," says Mr. Andree, p. 44, "has been advised for the removal of biliary calculi. This, however, has arisen from the uncandid representation of a very uncommon case, but one which has, I know, occurred, to wit, of an abscess forming between the calculus, and the integuments of the abdomen. In this case, when the matter is let out, the stone may be felt by a probe or the finger introduced into the wound, and probably extracted. But the kind and wise process of nature in such cases is, first, to form a complete adhesion between the gall-bladder, or ducts, and the peritoneum, so that, when such abscess is opened, the cavity of the belly remains unexposed, that is, not cut into. One case of this kind I have seen, in which the abscess had been opened, and a fistulous aperture remained, leading to a gall-stone. Morgagni mentions three cases of the same description. The first was cured. The second had a fistula left, by which a thin yellow liquid was discharged ; the third had an ulcer remaining, which, with its sanies, discharged bilious calculi at times."

541. It may be observed here, that when the gall-bladder becomes distended with bile, without there existing any mechanical obstruction of the ducts, as occasionally happens, it can sometimes be emptied by pressure. Thus, in the third case related by Petit, when he was proceeding to open a tumour in the hepatic region under the impression of its being an abscess, scarcely had he cut the skin, when he was sensible of the collapse and diminution of the tumour, which led him to suspect the real nature of the case ; and accordingly the patient soon afterwards discharged by stool, a large quantity of green bile. In his sixth case, the gall-bladder could sometimes be diminished in bulk by pressure, and sometimes underwent a spontaneous evacuation. Dr. Bright, however, in noticing a case in which the gall-bladder had long been distended by an accumulation of its own secretion, in consequence of a biliary calculus being impacted in the cystic duct, and had become so thin as to give way under the ordinary manipulation during dissection, suggests the practical caution that the same thing might

have happened during life ; in which event, peritoneal inflammation would have been almost infallibly produced. This struck him the more forcibly, because he had several times, during his attendance, taken the tumour in his hand, and made gentle pressure upon it as upon an elastic bottle ; observing, while he did so, that it felt as if he might possibly have overcome the obstruction, had he dared to make bolder pressure.

SECTION II.

SPECIFIC REMEDIES, PARTICULARLY MERCURY.

542. We come now to the consideration of the employment of specific remedies in the diseases of the biliary organs. In entering on this subject, we think it right at once frankly to avow our conviction that medical practitioners in general, both in the British Isles and in the British tropical colonies, have been in the habit of placing too great reliance, and of making too free a use of Mercury in the diseases which they know or imagine to depend on morbid conditions of the biliary organs, and especially of the liver. There are unquestionably many cases of such diseases in which this medicinal agent appears to answer the ultimate purpose of its employment—the restoration of health—efficaciously and safely ; but we are persuaded that, in many of the cases in which it has been customary to employ mercury, all the beneficial effects derived from its use could be obtained equally, if not more agreeably and quickly, from other remedies, did not a reliance on this agent engender a supineness in the use of these ; that there are many cases in which its employment aggravates the disease and retard its cure ; and that there are many in which, whatever be its immediate effect upon the existing disease, it lays a foundation for serious, and, too often, irreparable mischief to the constitution.

543. Whilst entertaining these convictions, we shall not take upon ourselves to affirm in what cases of diseases of the biliary organs mercury ought or ought not to be had recourse to ; but we shall suggest some considerations, and adduce some authorities, which we think will warrant the practitioner, who is anxious to arrive at a correct judgment on this subject, in confining his administration of mercury within considerably narrower bounds than has been the prevalent practice of British practitioners, particularly in hot climates.

544. In expressing doubts as to the accuracy of the conclusions at which so many eminent practitioners have arrived respecting the necessity and the advantage of the employment of mercury in the

various forms of disease to which the biliary organs are subject, nothing can be less intended than to call in question the good faith in which they have communicated their observations to the public. But so numerous and complicated are the sources of fallacy to which medical men are exposed in judging of the powers which remedies exert over diseases, particularly those of a chronic character, that no part of the medical art illustrates more strongly the *πειρα σφαλέρη* and *κρίσις χαλεπή*, which Hippocrates so justly ranked among the prime obstacles to its advancement.

545. In particular, it may be observed, that when a routine system of practice for the treatment of any disease becomes generally established, there are two errors, into which those who follow it are extremely apt to fall. The *first* is that of ascribing all the *beneficial* changes which may occur in the progress of a case of this disease, to the remedies employed, overlooking entirely the share which natural processes may have had in the production of these beneficial changes; and when the routine consists in the employment of a supposed *specific* remedy, overlooking also the beneficial influence of other curative means that may be had recourse to simultaneously.

546. The second error liable to arise out of the establishment of a routine system of practice in any disease, is that of ascribing entirely to the malady, or to peculiarity of constitution, any *prejudicial* changes that may occur in the progress of a case so treated, without a suspicion being excited that the remedy can have had any share in producing them. Of both these forms of error, the history of the treatment of Iritis with mercury, if impartially recorded, might, we are persuaded, afford abundant illustrations.

547. The full exposure that has now been effected, in different quarters of the globe, of the delusion under which the medical profession and the public long laboured with respect to the supposed necessity of the free administration of mercury in the treatment of venereal complaints, and of the surprising manner in which they shut their eyes to the injurious consequences too frequently resulting from that mode of practice, — persuading themselves that they witnessed the destructive operation of the disease in morbid phenomena which were actually, for the most part, the genuine consequences of the remedy; that exposure, we say, certainly tends to diminish, in some degree, the reluctance of the inquiring physician to avow some doubt as to the necessity, advantage, and innocuousness of the same remedy in another class of diseases, in which it had been considered to be not less required, nor less beneficial.

548. We are well aware that by many who have, during their practice in hot climates, witnessed the diseases of the biliary organs, on a much more extensive scale than can fall to the lot of European practitioners, and who feel confident in appealing to their personal experience as to the benefits to be derived in the treatment of these maladies from the free administration of mercury, the mere hinting a doubt on the advantages of this plan of treat-

ment may be deemed presumptuous. But, even at the risk of exposing ourselves to this degree of censure, we shall venture to express a hope that in the progress of the improvement which medical practice in India cannot fail to make, under its present zealous and judicious mode of cultivation, it will be established that the necessity for the administration of mercury in the treatment of hepatic affections, as well as of some other diseases for which it is at present in general very liberally administered, is much less than even those authors who have most strenuously enforced the propriety of caution in its employment, have conceived; for a few denials of its mischievous action on the economy of a considerable portion of those who are submitted to its operation go but a short way to overturn the ample evidence of the fact which stands recorded in medical writings, and of which few practitioners can have failed with their own eyes to have witnessed illustrations.

549. In taking a review of the several diseases of the biliary organs in which the administration of mercury has been supposed to be advantageous, and of the mode of operation by which it has been supposed, in respect of each of these diseases, to produce this beneficial result, we shall follow the same order as we have done in considering the general treatment; directing our attention, in the first place, to its use in the Functional Derangements; in the second place, in the Congestive and Inflammatory affections; and, in the third place, in the Chronic and Structural alterations of these organs.

A. FUNCTIONAL DERANGEMENTS.

550. First, then, as respects the employment of mercury in the treatment of the functional derangements of the biliary organs, and its applicability to the several indications which we have pointed out as requiring to be fulfilled in their management.

551. That dyspepsia or indigestion, in a large proportion of the cases in which it occurs, in our own climate, depends on a morbid exercise of the functions of biliary secretion; that this deranged exercise of function may consist either in a deficient or in an excessive secretion; and that the bile, whether excessive or deficient, or even perhaps natural, in quantity, may at the same time be vitiated in quality — are opinions which, as we had formerly occasion to observe (8), have long been of very general acceptance among medical practitioners in the united kingdom. And connected with these pathological views respecting the origin of what are usually called bilious derangements or disorders, is the therapeutical dogma, which has not only been acted on very extensively by medical men, but has found especial favour with the public, that in whatever of the several respects that have been mentioned, the function of the liver may be deranged, it is in a great measure, or mainly, by the administration of mercury that the derangement

is to be overcome, and the healthy action of this important organ to be restored.

552. Of the almost superstitious reliance placed by some practitioners on the beneficial operation of mercury upon the functional action of the liver, we cannot give a better illustration, perhaps, than is to be found in the following quotation :* — “The power which this medicine (calomel) possesses over the secretory functions of the liver is not confined, as it is generally thought, to increasing its activity when in a sluggish state ; for it is equally efficient to reduce the secretory action when in excess, its tendency, when acting, being to *restore* the actions of the liver, whether deficient or excessive, to their natural and healthy state. In those cases where there is an impeded secretion of bile, this medicine has the power of restoring it, occasioning in many cases, at first, a very copious discharge ; and where the secretion is in excess, as in the second stage of cholera morbus, its powers in subduing the inordinate action of the liver are equally distinguished ; and where, again, the secretion is in a proper state, it appears so have but an inconsiderable effect upon the liver, though given in those doses in which it was before so active.”

553. In reading these remarks, it is difficult to believe that they refer to any agent of a less intelligent and discriminating character than the Archeus of Paracelsus, or the Anima of Stahl. Few practitioners, indeed, avow in words so explicit as those which we have quoted, their belief that mercury is capable, in operating on the liver, of inducing the most opposite results, according to the immediate necessities of the economy ; but it is not the less true that, by a belief of this kind, though unavowed, a large number of medical men have been guided in their practice.

554. It is but justice to the late Dr. Trotter, to observe, that, in his View of the Nervous Temperament, he was one of the first physicians in this country who opposed the fashionable practice of administering mercurial medicines in the treatment of the so-called bilious complaints. In that opposition he was ably seconded by Dr. Saunders. “The general and indefinite term of bilious,” says the latter eminent physician, “as applied, in popular language, to almost every affection of the stomach or intestines, and even of the nerves, producing irritation and symptoms of hypochondriasis, has given rise to a very general and indiscriminate use of mercury in this country. This has been done under a false impression, that all those symptoms originate, and are connected with a diseased or obstructed liver ; the same term is applied whether the secretion be too copious or too scanty, whether the organ be too hard or too soft, too large or too small ; in all cases mercury, as a specific, chiefly on the authority of the East Indian practice, has been recommended, and is now in very general use. My own experience, however, has furnished me with the means of ascertaining, that even

* Ayre, Practical Observations, &c. 2d edit. p. 186.

calomel, which is the most manageable preparation of mercury, cannot be employed with safety or success in a great variety of cases in which it has been recommended ; it is, however, frequently preferred from having neither taste nor smell, and from its acting in a small bulk ; but it ought seldom to be used by itself as an habitual purgative or laxative, as its operation in that case is extremely uncertain ; sometimes it produces mucous and bloody stools, accompanied with tenesmus and prolapsus ani, irritating and exhausting the power of the intestines, and laying the foundation of painful and dangerous strictures of the rectum. It is generally improper in dyspeptic complaints, especially in delicate and irritable habits ; at other times, instead of acting on the bowels, it forcibly determines to the mouth, and produces all the inconvenience of a salivation, when not expected or wished for. It enters into the composition of most of our worm medicines which are advertised for sale, and from the free and unskilful use of such in the hands of ignorant people, considerable debility, emaciation, and even convulsions in children, are induced." (Observations on the Hepatitis of India, p. 26.)

555. In reference to the same views, Dr. Abercrombie has justly remarked, that mercury is often used "in an indiscriminate manner, and with very undefined notions, as to a certain specific influence which it is believed to exert over all the morbid conditions of this organ. If the liver is supposed to be in a state of torpor, mercury is given to excite it ; and if it is in a state of acute inflammation, mercury is given to moderate the circulation, and reduce its action. Effects the most indefinite, if not contradictory, are also sometimes ascribed to it in regard to its influence on the secretion of bile, and in those affections which are commonly called bilious. Upon the principles of induction with regard to cause and effect, which are recognised in other sciences, it may be doubted whether all these maxims can be right, but I will not take upon me to decide which of them is wrong. I leave the subject, therefore, with merely throwing out these doubts, the force of which must be felt by every pathological inquirer ; and with hazarding the opinion that much of the prevailing doctrine on derangements of the liver requires to be revised and perhaps corrected. There are certainly many parts of it of which the pathologist must be allowed to doubt whether they are not at variance with the principles of philosophical inquiry."

556. That Mr. Twining had not seen reason to believe in any self-regulating action of mercury upon the secretion of the liver, is obvious from the following observation on jaundice. "In every case of jaundice, where the stools are white, or of a very pale grey colour, the employment of mercurials is of doubtful propriety ; since we have evidence of the abundant secretion of bile, which is absorbed, so that its colour is visible in the eyes, urine, and skin, at the same time that we have reason to believe its transit along the common duct into the intestines is obstructed. Mercury, with a

view of exciting biliary secretion, in such cases, would be as unreasonable as the administration of diuretics to a man with a distended bladder and whose perspiration had an urinous odour, showing that urine was freely secreted, and absorbed into the system, while we knew that he had an impervious stricture of the urethra." (i. 383.)

557. Nor is it by its power of regulating the mere secretion of the bile that mercury is conceived to prove efficacious in the dynamical affections of the biliary organs. By many it is alleged to possess the power of aiding the bile in its course through its ducts into the alimentary canal, in cases in which it accumulates in these passages, or the power of *emulging* the biliary ducts, as it is termed; though by what mechanism, physical or vital, this is effected, no one, so far as we are aware, has as yet undertaken to explain. "The mode in which alone calomel proves efficacious," says Dr. Curry (Saunders, p. 332, note), "is by emulging the biliary ducts; and the evidence and measure of its salutary operation, is the quantity of bile which it evacuates by stool. Though its effects, then, be ultimately that of a cathartic, yet it is not simply as such that it is useful, but by acting specifically, and being (if I may be allowed an antiquated expression) a cholagogue or evacuant of bile."

558. That mercury, in the form of calomel and of grey oxide, acts upon the intestinal canal as a purgative, is a fact of daily observation. In what manner medicines so acting, and more especially those the operation of which is exerted particularly upon the duodenum, may be supposed to affect the secretion and excretion of the bile, we have already pointed out (437); and the question is, whether the operation of calomel and blue-pill is more favourable in these respects than that of some other purgatives which also have been esteemed cholagogue?

559. Mr. Annesley imagines (Sketches, &c. p. 398) that he has discovered a quality of calomel which at once proves and explains its possessing superior efficacy as a cholagogue. From experiments on dead bodies, confirmed by observations on the living, he has been led to believe that this medicine exerts a chemical action on the tenacious secretion which lines the mucous surface of the intestinal canal, so as to render it more fluid, much less tenacious, and more easily detached from the mucous surface. In this way, he conceives, it proves the means of removing such obstruction of the common choledoch duct, as this secretion is capable of occasioning; and thereby effects a discharge of bile into the intestines. When the secretion so acted on by the calomel has been removed by a cathartic draught, the influence of subsequent doses will, he conceives, be more readily propagated along the canals of the ducts to the gall-bladder and to the liver itself. The nature of this influence, or rather its fundamental effect, whether excretory or both, is not very explicitly stated by Mr. Annesley; but several of

his remarks seem to recognise a power in calomel to increase the amount of the biliary secretion.

560. It but too frequently happens that the symptoms indicative, or supposed to be indicative, of bilious derangement, for the removal of which the administration of calomel is had recourse to, are the consequences of excessive indulgence in the pleasures of the table; and that many who are in the habit of taking this medicine at their own hands, have recourse to it in the expectation of rendering a perseverance in such indulgences compatible with the perservation of health. "I am frequently applied to, every hot season," says Mr. Twining, (i. 50) "by pale, emaciated, and unhealthy men, long resident in India, who have been taking calomel at night and purgatives in the morning, because their stools are disordered with 'vast quantities of black filthy bile,' which is not diminished by persistence in their plan of calomel and purgatives; at the same time that they are eating meat every day, and drinking plenty of claret, 'to support their strength.' Such patients are generally advised to omit all medicine except a compound rhubarb pill at night, and, if requisite, twenty or thirty grains of compound powder of jalap in the morning, to eat no vegetables, and to drink no claret, but to eat a moderate dinner of meat and bread, and some rice, if they like it, and to drink sherry and water. In less than ten days the majority of these invalids usually return to me, stating that they are worse than ever, as their livers are entirely inactive, their stools very pale or nearly white, and they are satisfied, that, without some calomel, they are not likely to exist long. At last, these poor people find that they are exhausted in constitution, fretful in mind, and having undertaken a business which they do not understand (viz., the task of regulating the functions of their livers) they are not likely to be very successful. Some of these patients who can be persuaded to relinquish the plan of perpetually vexing their livers, and injuring their constitutions by the habitual use of calomel, gradually get into a better state of health, by taking exercise, keeping the bowels free, and following such a system of diet as is proper to invigorate the constitution."

561. Mr. Martin, in his Official Report on the Medical Topography and Climate of Calcutta, particularly insists on the fact that, when the use of mercury, in however small a quantity, is long continued, it proves highly injurious to the constitution, "Another extensive source of disordered health," says he, p. 123, "I must here mention, as it has come frequently under my notice, the long continued use of aperient medicines containing the mercurial preparations. It is common for patients to obtain from their physicians aperient pills, for instance, containing some portion of calomel or blue pill. This may have been given with a particular view, or for an especial occasion only; but it often happens that the patient continues, for months, and even for years, that which was intended to be used but for days or weeks. The results are very lamentable. I have seen persons in a state of nervous irritability,

bordering upon insanity, from this cause, with a sub-acute inflammation of the mucous digestive surface, and chronic ptyalism — all resulting from the long-continued and frequently unconscious use of mercury.”

562. The facility with which calomel can be administered to children renders it a very favourite form of purgative medicine both with parents and practitioners; and on the supposition that the green and slimy stools, — (which, along with symptoms of general fever, may be said to form the most common characters of the diseases that affect children,) — depend on superabundance or vitiation of bile, calomel, from its alleged power of correcting the action of the liver, is conceived, where the alvine excretions present this character, to be a peculiarly appropriate remedy.

563. On this subject, the anonymous author of a valuable paper formerly referred to (353), remarks, “Calomel is generally inadequate to convert the green stools of children to their natural colour. I have almost always found that, when calomel purges are given, the excretions continue of an unhealthy colour and consistence as long as the mercury is persisted in. I do not mean to say that this will always occur; but, in the majority of cases, it will be found that the stools become even more slimy than before, and, in some instances, they will present a greenish flocculated appearance. I have much doubt whether, in cases such as I have mentioned, calomel purges have any superiority over other aperients. It may be asked, What is to be expected from this medicine more than from scammony, jalap, or rhubarb, when only a purge is required? But, admitting that the intestines are more effectually cleared out when a few grains of calomel are combined with another aperient remedy, it appears to me quite unnecessary to repeat the mercury so often as practitioners are generally in the habit of doing.”

564. The same author suggests, that, “by attending to the state of the alvine excretions, the practitioner may determine, in most instances, when the further use of mercury is likely to prove hurtful.” “If we find the stools continue slimy and green, after two or three doses have been administered in succession, we may rest assured that the mercury will not bring about a change for the better in their appearance. The longer we persist in the use of it, the more unhealthy the motions will appear. I have seen these continue of a greenish unhealthy colour for weeks, when it has been necessary to persist in the use of calomel in order to remove another complaint, or where it had been given with a view of correcting the alvine discharges. ‘Ought the use of calomel to be dispensed with altogether in the common gastric complaints of children?’ I should say, that, upon the whole, more harm than good results from the practice of giving mercury to young children, in simple gastric affections.

565. Mr. George, in a letter on the injurious effects of mercury in some forms of disease, particularly notices a state of disorder in children, occurring more frequently in those of scrofulous temper-

aments, which is evinced by languor, loss of appetite, a diminution and sometimes a total cessation, of the biliary secretion, with slight emaciation, more particularly of the extremities, — such a train of symptoms, in short, as would, he says, universally be supposed to demand the free and continued use of mercurial medicines, but in which his experience would declare that they are absolutely prejudicial. (Lond. Med. Gaz. xii. 569.)

566. The abuse of calomel in the treatment of the diseases of children in India, on the plea of these depending on hepatic derangement, is strongly reprobated by Mr. Twining. “The domestic plans of regulating the function of pale and delicate children’s livers, and keeping their biliary secretions in fine order, by the frequent use of calomel, are neither more successful nor less barbarous,” he says, than the practice above alluded to (560), as pursued by old residents. “Although,” continues he, “the absolute necessity of employing calomel in the treatment of some stages of many of the acute diseases of children in this country is acknowledged, it is lamentable to observe the vast injury that is inflicted on numbers of these poor pale unhealthy creatures by the calomel discipline intended to rectify the state of their biliary secretion, at the time that their systems are suffering from extreme debility and anæmia, and when the power of the constitution to form healthy red blood is still farther impaired by the use of mercurials.”

B. CONGESTIVE AND INFLAMMATORY AFFECTIONS.

567. We come next to consider the employment of mercury in those affections of the biliary organs which depend on derangements of the circulation through these organs, viz. the congestive and the inflammatory; and here the first consideration which suggests itself is, that the alleged beneficial effects of mercury in these maladies are explained on very different principles, by different practitioners; being by some conceived to depend primarily on its operation on the liver, or on the intestinal canal, as others imagine, and secondarily through these organs upon the circulatory system; whilst others attribute these effects to its direct operation upon the circulatory system itself, or on the portion of the nervous system upon which the action of the circulatory system immediately depends.

568. Those who advocate the expediency of the administration of mercury in acute hepatitis, particularly in its earlier stages, do so upon one or other of the following grounds: *first*, that this substance, being possessed of a powerful antiphlogistic influence, is a highly beneficial remedy in all forms of inflammatory diseases, as they occur in all climates; *second*, that whatever be the influence of mercury in other inflammatory diseases, inflammation of the liver is, in a peculiar degree, under its control; and, *third*, that whatever may be the case respecting the hepatitis of temperate

climates, the ordinary depletory antiphlogistic treatment is not sufficient for the removal of the inflammatory affections of the liver as they present themselves in hot climates, which can only be subdued by the concurrent agency of mercury.

569. If the first of these propositions be admitted to be established, it necessarily follows, unless hepatitis can be shown to be an exception to the general rule, that the use of mercury in this disease must be highly advantageous. Mr. Twining accordingly conceives, that "the efficacy of mercury in hepatitis may be accounted for on the same principles on which its use in the remote stages of other inflammations depend."

570. Dr. Hamilton, of Lynn Regis, in an article entitled, "An Account of a successful method of treating Inflammatory Diseases by Mercury and Opium," published in the 9th volume of the Medical Commentaries (1785), was the first who produced in the minds of British practitioners, a belief in the general antiphlogistic powers of mercury. He states that he was first led to this method of treating inflammatory diseases by information which he had obtained, so early as 1764, relative to the established method of curing the hepatitis in India, fortified by some trials which he himself made on that disease, and by the consideration of its beneficial operation, when administered in other diseases of an inflammatory character, as ophthalmia, syphilis, and inoculated small-pox. Rationally inferring that "the general cause of an inflammatory diathesis, be what it may, must be the same whether the inflammation is seated in the meninges, pleura, lungs, diaphragm, or any other internal membranous part," and that "the circumstance of locality can, therefore, make little or no alteration in the general intention of cure," Dr. Hamilton thought it reasonable, from analogy, to conclude that mercury would prove equally beneficial in every kind of inflammatory disease as it had been found in hepatitis and the other affections already alluded to. In this belief he was confirmed by the results of his own further experience, in a great variety of inflammatory affections. Dr. Hamilton mentions his having observed a great variety in the *physiological effects* of mercury thus administered, and particularly specifies sweating, purging, and ptyalism: but, he adds, that he has seen large quantities of mercury given for a continuance, without affecting the mouth in the least, or producing any very large visible evacuation, and yet the patient be visibly relieved; — leaving it to be inferred that the antiphlogistic power of mercury is not entirely, if at all, dependent on its evacuant operation.

571. Two years later, viz., in 1787, Dr. Lind published, in the 8th volume of the London Medical Journal, an account of the efficacy of mercury in the cure of inflammatory diseases and the dysentery, in which he ascribed the beneficial operation of mercury in that class of diseases, to its being possessed of directly antiphlogistic powers.

572. The degree of reliance that ought to be placed on mercury,

in the treatment of inflammatory diseases, is at the present day a *quæstio vexata* in medical practice, particularly in this country. We think we can perceive within our own time, that the confidence reposed by the most observant practitioners in its antiphlogistic powers, has undergone a considerable diminution; and it gives us much pleasure to be able to quote the opinions that have been expressed on this point of practice by Dr. Alison (History of Medicine, prefixed to the Cyclopædia of Practical Medicine, p. xcv. xcvi.), in which we generally concur. After observing that mercury has been so highly recommended as a remedy for inflammatory affections by various practical authors within the last half century, that its virtues might be supposed to have been completely ascertained, Dr. Alison proceeds to remark: "But those who are aware of the fallacies attending the observation of the effects of remedies in acute diseases, particularly of such remedies as are only employed as auxiliaries to others of acknowledged efficacy, can easily understand that the virtues of mercury in inflammatory diseases may have been much overrated. It has been often represented that not only the purgative mercurial medicines, as general evacnants, and as means of acting particularly on the secretion of the liver, are of peculiar importance; but that the action of mercury on the system at large is the surest means of controlling those effusions, and particularly the effusion of coagulable lymph, on which the danger of several inflammatory diseases essentially depends; and, in some instances, a less defined and more specific virtue in checking inflammation has been attributed to the constitutional affection from mercury. Thus, the remedy has been successively vaunted in the case of acute hydrocephalus, of-cynanche trachealis or laryngea, and (generally in the form of calomel and opium) in that of pneumonia, bronchitis, pleuritis, pericarditis, peritonitis, hepatitis, and dysentery; and reference has been often made to the effects which may be observed from it in inflammation of the iris, tending to effusion of lymph there, as demonstrative evidence of its peculiar efficacy. But it may be stated with confidence, that, in the opinion of many of the best informed members of the profession, there has been much exaggeration in all these statements. That there is something very peculiar in the effect of mercury in acute inflammation, particularly of the liver and of the mucous membrane of the bowels, in the hot climates, the numerous and concurrent authorities which might be quoted on the subject leave no reason to doubt; but that any such decided effect can be observed from exciting the specific effects of mercury (marked by its action on the mouth) during the acute stage of any internal inflammation in this country, has certainly not been established to the satisfaction of most practitioners. That calomel is one of the most convenient purgative medicines in such diseases is certain; and it is equally certain that it is one of the best corrigents that can be used along with opium, when the soothing effects of the latter medicine are demanded, because it

both corrects its constipating effect, and probably aids in determining its action to the skin, and, when given with opium, much more generally represses than excites vomiting. When given so as to act only in these ways, it may be unquestionably held to be a useful, though not one of the most powerful remedies in inflammatory diseases. But when its action on the mouth has been excited in the course of acute internal inflammation (which is the only fair way of judging of any specific agency of the mineral on the inflammatory process,) we have not only been very generally disappointed of seeing any improvement of the symptoms immediately follow that change, but are constrained to add, that we have more frequently seen an aggravation of them."

573. But, in the second place, whatever judgment we may be disposed to form respecting the general antiphlogistic powers of mercury, we cannot altogether regulate by this judgment our opinion as to the necessity or advantage of its administration in the inflammatory affections of the liver. "An opinion has for some time prevailed," says Dr. Saunders (p. 325), "that mercury is a specific in every disease of the liver; and that even in active phlegmonous inflammations it will obviate suppuration. This opinion appears to have been founded on an idea that there is something *very peculiar* in the inflammation of the liver that is not met with in any other organ."

574. If mercury really exerts a greater influence over the inflammatory affections of the liver than over those of other organs, it is obvious that this effect must be in virtue of its peculiar mode of affecting the liver, whether this consists directly in favouring the excretion, or in promoting the secretion, of the bile.

575. "Why a medicine possessing such a property (that of emulging the biliary ducts) should be especially serviceable in hepatitis," Dr. Curry illustrates by the following analogy: "Practitioners have daily opportunity of seeing the immediate and great relief afforded by drawing out the milk from the female mamma, where this gland becomes inflamed after lying in, or during the period of lactation: indeed, in many cases of inflamed breast, little else is necessary than emptying the lactiferous ducts at the beginning, and repeating it from time to time as the milk re-accumulates;—the inflammatory action of the vessels often subsiding spontaneously, when this cause of distention and irritation is removed. Though the means employed in hepatitis are necessarily different, yet the effect is the same; the general distention of the liver is lessened by emulging it of its bile." In reference to this comparison Mr. Twining says (p. xviii), "We have been told that mercury is beneficial in hepatitis, in the way that the breast-pipe or pump relieves inflammation of the female breast when milk abscess is impending. But a legitimate parallel cannot be established in the action of the respective remedies. The pipe relieves the inflamed breast by drawing off the superfluous milk, without ex-

citing increased secretion. Has the action of mercury an analogous effect on the liver?"

576. In Great Britain, for many years past, the mercurial plan of treating hepatitis has been so generally pursued, that the experience of this country affords few data for judging how far the treatment of that malady admits of being safely conducted on the ordinary principles of the antiphlogistic method. Even in this country, however, its use in the early stages of hepatitis has been objected to by practitioners of very high authority. "Calomel is often recommended," Dr. Pemberton remarks (p. 31), "in the early stages of inflamed liver. In a large dose as a purgative, I cannot object to it, but as a medicine to keep up a continued discharge from the bowels, I regard it as much inferior to the neutral salt recommended above (a drachm of sulphate of magnesia); and as a mercurial alterative at this period of the complaint, its use is wholly inadmissible. I may also, in the same manner, object to the early use of mercurial ointment, the effect of which would doubtless be to increase the action of the arterial system which is already too much quickened."

577. On the Continent of Europe, the mercurial treatment of hepatitis does not appear ever to have come into favour, though the Indian and English mode of practice in this disease has been repeatedly explained by the systematic medical writers of the different Continental nations, as by Pinel in France, Frank in Austria, and Vogel in Hanover. We are not aware, however, that there are any grounds for believing that the treatment of the inflammatory affections of the liver pursued on the Continent of Europe is less successful than that employed in this country; and even could it be shown that such were the case, it would still remain to be determined whether this difference in the result of practice was attributable to the less vigorous employment of the ordinary antiphlogistic means of treatment, or to the neglect of mercury. In looking into the various Medical Dictionaries which have, within the last twenty or thirty years, been published in France, we do not find any reasons for supposing that the results of the practice pursued by the physicians of that country, in this class of affections, have been so unsuccessful as to incline them to make trial of the mercurial mode of treatment. Thus, in the article *Hepatitis*, in the *Dictionnaire des Sciences Medicales* (vol. xxi. published in 1817), the only allusion to mercury is in the following terms: "The emphatic manner in which mercury is extolled by the English physicians throws some degree of suspicion on the encomiums which they so lavishly bestow on it. This is still a point of practice on which it would be desirable that experiments made dispassionately and without prejudice should throw the light necessary to the full elucidation of a property of mercury respecting which it is at least allowable to entertain doubts; and the more so that more than one writer of the three kingdoms attributes to this medicine the very equivocal power

of effecting the resolution of collections of pus already formed." In the corresponding article of the *Dictionnaire de Medecine* (vol. xi. published in 1824), the only reference to the employment of mercury in hepatitis is an account of the mode of practice pursued in India, professedly derived from the writings of P. Frank; and in the *Dict. de Med. et Chir. Pratique* (vol. ix. published in 1833), besides the mention of calomel among the gentle purgatives proper to be employed, the only notice taken of mercury is to the following effect: "Mercurial frictions on the region of the liver, recommended even in the acute period of hepatitis, and by some English physicians to the length of salivation, do not in any case supersede the necessity of evacuations of blood, and of the other antiphlogistic means; and it is not yet well demonstrated that they have any share in the powerful action of these latter remedies." We believe it could be shown, by a reference to the medical records of the other Continental nations, that they afford as little support to the idea that mercury is indispensable to the cure of hepatitis.

578. In the third place, supposing it were established that hepatitis as it presents itself in temperate climates, may be successfully treated independently of the use of mercury, it might no doubt still be true, as many are disposed to believe, that in the hepatitis of hot climates, and of India in particular, this remedy is indispensable, or at least highly advantageous. Even Dr. Alison, in the passage above quoted, is disposed to admit, in deference to the numerous and concurrent authorities, that "there is something *very peculiar* in the effect of mercury on acute inflammation in the hot climates, and particularly on inflammation of the liver and of the mucous membrane of the bowels," — that is to say, in hepatitis and dysentery. For our own part, we confess that our knowledge of those fallacies to which Dr. Alison has so justly referred, as throwing great difficulty in the way of a correct appreciation of the influence of remedies over diseases, leads us to suspect that in this part of the subject also fallacy may lurk, and that the influence of mercury over Indian hepatitis may have been much overrated.

579. If the use of mercury in the treatment of inflammatory affections of the liver is more requisite in hot than in temperate climates, it falls to be inquired whether this depends on intrinsic or on adventitious circumstances, — on the character of the malady, or on the conditions of the subjects in whom it occurs.

580. Respecting the character of the malady, it has frequently been maintained that the hepatitis of India is an essentially different disease from that of temperate climates, and that the maxims of practice applicable to the one cannot be relied on in respect of the other; but we do not find that the points of difference have been stated with such precision as to justify either the pathological or the therapeutical conclusion.

581. From the Army Statistical Reports, it does not appear that hepatitis, either in its acute or in its chronic form, kills a larger proportion of those whom it attacks in India than in Great Britain;

the proportion of deaths to admissions, on account of acute hepatitis, being, in Bengal, Bombay, Madras, and Great Britain respectively, *one* in 16, 17, 18, and 19; and on account of chronic hepatitis, *one* in $8\frac{1}{2}$, 18, $14\frac{1}{2}$, 11; or taking both forms collectively, *one* in $12\frac{1}{4}$, $17\frac{1}{2}$, $16\frac{1}{4}$, 15. It is to their much greater prevalence, therefore, that the larger mortality from these two forms of hepatitis in India, as compared with Great Britain, is attributable, and not to any more severe character of the disease.

582. In attempting to arrive at any definite conclusions as to the efficacy of a particular mode of practice in hepatitis, it would be desirable to know what proportion the mortality in cases of this disease bears to that in cases of inflammation of other parts, and particularly of other parenchymatous organs; and it would be requisite at the same time to keep in view the circumstances, independent of mode of treatment, on which the comparative fatality of each of these diseases may be supposed to depend. Besides the sources of danger common to all inflammatory affections, it is probable that each has some such sources more or less peculiar to itself, and it may not be out of place here to notice some of the circumstances which may be supposed to augment the mortality arising from hepatitis.

583. One great practical obstacle to the successful management of inflammatory affections of the liver seems to be, that, from the frequent obscurity of the symptoms which attend them, it is often very difficult to ascertain, in the first place, their existence, and, in the second place, their degree of intensity; and that the practitioner consequently is often left without any sufficient data to guide him in the choice, or in the adaptation, of his measures of treatment.

584. Another serious obstacle to successful practice in these affections seems to arise from the rapidity with which hepatitis is liable to pass into the suppurative stage, and that even, in many instances, without any very obvious symptoms having given warning of the morbid changes that are taking place in this organ.

585. As an additional obstacle may be stated, the great liability of the acute to terminate in the chronic form of hepatitis, which constitutes in itself a disease peculiarly difficult of removal.

586. How far each of these circumstances in the natural history of the inflammatory affections of the liver, tending separately or conjointly to increase the amount of danger with which they are accompanied, operates with more force in hot or in temperate climates, we have not, perhaps, the means of determining. But it is probable that inflammatory affections of the liver are the more serious in their consequences in hot climates, from their liability to supervene upon or to become complicated with other diseases of a severe character, particularly those of the alimentary canal.

587. The other rational ground on which it has been supposed that a different method of treatment may be necessary in the hepatitis of hot and of temperate climates, is the existence of important differences in the condition of those who are the subjects of this

disease; persons who have resided for some time in hot climates being considered unable to bear large depletions, particularly in the way of detracting of blood, and it being considered, consequently, desirable to subdue phlogistic diathesis by other means. Recent experience, however, seems to have proved that the apprehensions which have been entertained respecting the peculiar inability of old residents in India to endure depletions, in inflammatory diseases, proportional to the intensity of the inflammation, are exaggerated, and in a great measure groundless.

588. In judging of the weight which should be attached to the strong expressions of opinion respecting the indispensable necessity of the employment of mercury to the safe treatment of the inflammatory affections of the liver in India, that are to be found in the writings of all those who have practised in that country, it must not be overlooked that the relative influence of the ordinary anti-phlogistic treatment, and of the administration of calomel, in acute inflammation of the liver, has been variously estimated by different practitioners; and that the proper period for the employment of the latter remedy has been no less a matter of discordant opinion.

589. Mr. Curtis gives the following account of the mode of practice which was pursued at the Naval Hospital at Madras in 1782 and 1783. "Whenever the disease came on," says he, "with a considerable degree of fever, with acute and constant pain in the side and shoulder, some bleeding was practised: but in other cases it was never done; and, indeed, to the extent to which it could well be carried in a warm climate, and in relaxed habits, it seldom procured much relief." "In all other circumstances, or as soon as the pain of the side, heat, and fever had been a little abated by the use of these remedies (bleeding, blistering, and a purgative or two), mercury was immediately had recourse to, and the course pushed on as quickly as possible, without any regard to the state of the bowels, even where there was a constant flux, with bloody stools and tenesmus; sometimes where even a good deal of heat, thirst, and general fever were present, provided the pulse was not hard, and the pain of the side had somewhat abated, or was not very constant and acute." Of the beneficial effects resulting from this employment of mercury, Mr. Curtis speaks in the highest terms of eulogy. (P. 406-7.)

590. Dr. Helenus Scott informs us (*Med. Chir. Trans.* viii. 173), that he had not been long in India before he became convinced that, "in obviating abscess of the liver, we can trust to nothing but the mercurial preparations. Whenever the habit is impregnated with mercury to a certain degree, which the state of the salivary glands and other constitutional effects sufficiently indicate, the patient remains quite free from the danger of abscess. I have long thought," this author goes on to say, "that, when such a misfortune does occur, it is to be attributed to want of medical skill, or to the application of the remedy at too late a period, after some change of structure, necessarily ending in abscess, had taken

place. Though bloodletting, blistering, purging, together with the other parts of the antiphlogistic treatment, may occasionally be useful, they are not to be put in competition with a proper use of the oxides of mercury, without which we can seldom remove any severe affection of the liver, whether it be acute or chronic."

591. Notwithstanding the confidence with which the two authors whom we have just quoted insist on the superior importance of mercury, in the treatment of hepatitis, as compared with other remedies, and on the necessity of a speedy recourse to it, numerous testimonies, and these proceeding from persons of not less authority as regards experience and judgment, establish the propriety of commencing the treatment of the inflammatory affections of the liver, in hot as well as in temperate climates, by active antiphlogistic remedies, so as to moderate or subdue the violence of the inflammatory action before the administration of mercury is entered upon.

592. "In the East Indies, where inflammation of the liver is endemic," says Dr. Saunders (p. 328-9), "I am informed on the best authority that many judicious and successful practitioners seldom administer mercury until the violence of the inflammatory action has been moderated by bleeding, active purging, and the antiphlogistic plan of treatment." "In recent attacks of liver complaints," says Dr. Dick (Saunders, p. 257), "*after* early bleeding, blistering, and the free use of laxatives, I never saw a case where suppuration came on if mercury were freely used, and continued till the mouth was sore; and if I be not much mistaken, it is in such cases that it has the best effects."

593. On the inexpediency of commencing the employment of mercury in the inflammatory affections of the liver, before their violence has been subdued by blood-letting, and other antiphlogistic measures, we have most valuable testimony from Mr. Annesley, who particularly insists on the difficulty or impossibility of inducing salivation (the recognised test of the system being brought under the influence of mercury), as long as the inflammatory action is subdued. "The exhibition of mercury in hepatitis, whilst inflammatory action is acute, is often hurtful, and tends to the production of abscess, unless when given with the view of producing its purgative effects only." (i. 509.) "No person who possesses just views of the operation of mercurial preparations upon the system, can suppose that the specific operation of this mineral will be readily induced in the system, during inflammatory diseases, before depletions have been instituted; or can doubt, if the use of this agent be persisted in before such depletions have been performed, that the irritable state of the pulse will be increased, and the supervention of abscess of the liver thereby promoted. We will not deny that if the disease of the liver be of a chronic form, and occur in those who possess a languid or weak circulation, the mercurial action may be speedily induced, full ptyalism ensue,

and the disease be quickly removed. But if ptyalism be not soon produced, and the mercurial treatment be persisted in for too long a period, much serious mischief will often ensue, more particularly if any constitutional inaptitude to the specific influence of the mercury exist." (i. 592.) "To attempt to effect the system with mercury in the active forms of hepatitis, or in many cases of chronic disease, before the inflammatory action is sufficiently subdued by the more energetic antiphlogistic remedies, we consider to be the cause of its often failing to remedy the disease; and we are confident that, when thus prescribed, it is frequently prejudicial, and even calculated to increase the disposition of the inflamed organ to run into abscesses." (i. 631.)

594. In these views Mr. Twining seems to have fully concurred. "I have advised," says he in his preface (p. xviii), a very antiphlogistic treatment for those cases of acute hepatitis which threaten to terminate in abscess, because I am satisfied that no other plan is safe. We may trust to the candour and impartiality of Curtis's evidence in this matter; he bled his patients little and seldom, from a fear of debility, and he used much calomel. No comment is necessary on the result of such treatment; his work shows that he had a most extensive acquaintance with hepatitis terminating fatally by the formation of abscess. The utility of mercury in hepatitis is readily admitted, but it is subordinate to venesection."

595. That the number of the followers of the doctrines and practice of Curtis, in India, has, in recent times, been greatly diminished, we have much satisfaction in believing: but that they are wholly extinct, must not, we fear, be supposed. Dr. Conwell, in observing (p. 354), that "ptyalism generally cures dysentery," gives the following insight into the state of medical practice in India, at the time he first became acquainted with it. "When I arrived in India twenty-five years since (*i. e.*, in 1810), the senior surgeons placed no confidence in any other remedy (than ptyalism). General bleeding was then discountenanced not only in dysenteric cases, but even in hepatitis; and I was publicly reprimanded for having bled Lieutenant Gwynne (of the 10th N. I.) at Jaulnah, for an acute attack. However, my patient's recovery consoled me." "It is common in India," said Sir George Ballingall, in 1818, "to look upon blood-letting as an evacuation which, if possible, it is upon all occasions desirable to avoid, and which ought never to be had recourse to, except in cases of extremity. Although this is a sentiment in which I have never permitted myself to indulge, yet I fear I have often been to blame for the omission of this important remedy. This, however, will perhaps be considered a venial fault in a very young practitioner, by those who know how imperfectly the system of depletion, in the treatment of diseases, was established in India at the time of my leaving it, and how formidable the opposition with which its advocates had to contend." And after a farther interval of ten years. Mr. Annesley writes (i. 588, 9), "It may appear, perhaps, incredible to many of

our readers, after having perused the observations contained in the present volume, upon the habits and modes of living of many Europeans in India, that there should be still found practitioners who espouse opinions unfavourable to the employment of vascular depletions in the hepatitis of India, and who place their sole reliance upon the use of mercury or nitric acid for the removal of the disease. Yet such is the case, although we believe the number is daily diminishing, and more correct views are becoming very general."

596. So much for the expediency of having recourse to mercury in the early period of simple hepatic inflammation. We have next to notice the opinions of practical authors relative to the use of mercury in those cases which threaten to terminate, or have actually terminated, in suppuration. We have quoted (559, 561) the statement of Dr. Dick and Dr. Scott, that when the system is brought under the influence of mercury, as indicated by salivation, suppuration will not occur. This, however, does not correspond with the experience of Mr. Twining, who, in concluding his observations on abscess of the liver, (i. 343), "in the course of this chapter we find many instances in which ptyalism took place, and still the formation of abscess of the liver was not prevented." But even supposing the observation correct, it would remain to be considered whether we should regard the salivation as the preventive of the suppuration; or whether the possibility of inducing the state of salivation is to be held as an indication that the affection does not tend to suppuration.

597. The converse of the proposition referred to in the preceding paragraph, viz., that salivation cannot be produced while suppuration is going on, has been asserted by a considerable number of practical authors of high authority. Mr. Marshall says on this point (p. 180), "When the liver contains an abscess, I suspect no quantity of mercury will cause ptyalism. Under such circumstances, the exhibition of mercury frequently occasions a soreness and heat of the gums, but rarely, if ever, ptyalism. Mr. Annesley makes a similar statement, and grounds upon it his recommendation to desist from the use of mercury where hepatic abscess is suspected. "In those cases," says he (i. 647), "where the formation of matter is evident, the employment of mercury ought to be entirely laid aside, excepting as a purgative; for attempts to affect the salivary glands with it will generally fail, will merely add irritation to an already irritable pulse, and materially injure the powers of the system, those very powers on which the future recovery of the patient most materially depends." "In no case where hepatic abscess formed," say Drs. Graves and Stokes, "were we able to affect the system with mercury, although exhibited in full doses." (Dub. Hosp. Rep. v. 107.) The only expression of doubt as to the impossibility of producing the state of salivation in cases in which hepatic abscess exists, which we have met with, proceeds from Mr. Sievwright, surgeon of H. M. 45th regiment, who, in mentioning a case in which the gums had

become swollen and sore, with well-marked salivary discharge, in consequence of mercurial action, although on dissection, there were found to be one abscess in the liver, of the size of an orange, and several others dispersed throughout its substance, adds: "This example serves to point out the erroneousness of the idea which some medical men have formed, viz., that where abscess exists, ptyalism can never be induced. Here we have an example in refutation of this opinion; and I may take the present opportunity of remarking, that I have seen other cases illustrating the fallacy of this notion at the stations of Dinapore, Cawnpore, and Meerut, on the Bengal establishment, and that I have likewise met with similar examples, though comparatively rare, on the Bombay side of India." (*Madras Quart. Med. Journ.*, No. II., p. 140.)

598. Dr. Malcolmson's testimony as to the inexpediency of administering mercury during the progress of hepatic suppuration, seems to us particularly valuable: "I cannot conclude," says he (*Med. Chir. Trans.* xxi. p. 106), "without expressing my opinion on the practice of giving mercurial medicines, where it is known that abscess in the liver has taken place, as is recommended in some works of authority, and appears to be much practised in this country. I have perused the histories of a great many cases in which mercury, in various forms, was continued after the formation of matter, but have not met with one where it seemed to be otherwise than injurious; except, perhaps, where cautiously prescribed for other symptoms supervening on some chronic cases: nor have I met in India with any judicious practitioner of competent experience, who approved of mercury in any form in such circumstances." "How certainly destructive," the same author remarks in another place, "is the treatment recommended and practised, of pushing the internal and external use of mercury, under the idea that the absorbents are in a state of such death-like torpor as not to admit the drug into the system; and that, if it can by any means be introduced, it will either remove the disease of the surrounding parts, or cause the absorption of the matter! And how few young or old practitioners will have the resolution to adopt what is styled 'a tardy irresolute practice, pregnant with mischief,' in withholding the supposed specific or antidote, even when satisfied in their own minds that it can do no good!" (*Edin. Med. Surg. Journ.*, lii.)

599. On the whole, then, it would appear, that, according to the best authorities of the present day, the proper period of inflammatory affections of the liver for commencing the use of mercury, is not in their early stages, but after the violence of the attack has been in a great measure subdued by the ordinary antiphlogistic remedies. "It appears on attentive observation," says Dr. Saunders (p. 329), "that the transition of active inflammation into a state of resolution, is not immediately followed by a healthy condition of the part; but it remains for a time debilitated and disposed to lapse into a chronic state. This will probably be found the proper

period for the exhibition of mercury, which acts as a spur on the vascular system of this organ, and, by its moderately stimulating effects, occasions a degree of action which, when protracted to a proper length, terminates in health." Mr. Marshall (p. 160) remarks, that, "should the acute symptoms subside without a return of health, and should there be no manifest proofs of the formation of pus in the liver, the use of mercury may then be tried, together with frequent moderate purgation. A mild degree of salivation is sometimes useful in this stage of the disease." "When active inflammation is removed," according to Mr. Anniesley, "then the mercurial action on the liver is necessary to elicit a free and healthy secretion of bile, and thereby to remove existing congestion and accumulations of acrid bile, as well as to restore the healthy and free state of the circulation of the organ." (i. 509.) And Dr. Murray, jun., — while he holds that, in the treatment of hepatitis as occurring in India, chief reliance is to be placed on venesection, carried to syncope, at the very onset, and repeated at intervals not exceeding twelve hours, till the acute symptoms yield, — conceives that, after active inflammation is subdued, mercury should be administered. "It is not sufficient," says he, "that the gums should merely be made tender; pyalism seems requisite to restore healthy action and function, and, when the active inflammation is subdued, it is generally induced by the fourth or fifth day, after which there will seldom be much uneasiness experienced in the side; but the gums ought to be kept tender by a continuance of the mercury, in diminished doses, for a period proportioned to the previous obstinacy of the symptoms." (*Madras Quart. Med. Journ.* No. I. p. 79.)

600. Whether the effects supposed to be produced, at this stage of hepatitis, by the action of mercury, are really attributable to the remedy, rather than to some salutary natural processes of the economy which has been relieved by the antiphlogistic measures previously pursued; and whether, if dependent on the remedy, they might not as certainly be induced by other medicines besides mercury, are points which it must be left to further experience to determine.

601. Supposing, however, the use of mercury at this stage of the inflammatory affections of the liver to be expedient, the next practical question to be considered respects the mode of its administration. But if medical practitioners have differed as to the indications with a view to the fulfilment of which mercury should be administered in the inflammatory affections of the liver, scarcely less do they differ as to the mode in which its administration ought to be conducted, — whether the system ought to be brought under its influence, according to the technical phrase, by small doses repeated at short intervals and for a considerable length of time, or in large doses at more distant intervals, and discontinued when marks of the system having become affected shall present themselves.

602. In Mr. Curtis's practice, the preparation of mercury most

generally used was a pill composed of a grain and a half of calomel and two of rhubarb and soap. Two of these pills were given every night and morning (six grains of calomel per day); and if it was thought necessary to have the mouth soon affected, a drachm of mercurial ointment was also rubbed in along the side. "After the mouth became sore, the mercury was continued in smaller doses for two or three weeks, or until every symptom of the disease had disappeared."

603. To Mr. Annesley it appears that, "to induce the mercurial excitement of the vascular system, indicated by slight soreness of the gums, and to exhibit mercury or calomel in small quantities frequently repeated, with this view, is to keep up a state of slow inflammatory action in the secreting substance of the liver, which may of itself terminate in abscess; whilst, if the full operation of mercurial remedies be speedily induced and ptyalism become abundant, or derivation from the seat of the disease is occasioned to the mouth and salivary apparatus, the disease of the liver speedily subsides, and the functions of the organ are restored to their healthy state." (i. 594.) When the use of calomel is clearly indicated, therefore, it is most beneficial, according to Mr. Annesley's experience, in large (scruple) doses, generally at not less than twenty-four hours, between the administration of each dose. (Sketches, &c. p. 378.) "Those who prescribe five grains of calomel every three or four hours, with a view of inducing the constitutional effects of mercury, produce much greater irritation of the alimentary canal, are longer in obtaining their object, and exhibit much more calomel for the removal of the disease, than those who give twenty grains only at bed-time, with a purgative in the morning, and saline diaphoretics through the day. This latter dose acts as a sedative to the irritable stomach in this disease, while smaller doses increase the irritability of this viscus when it is present, and often induce it where it was previously absent."

604. The administration of large doses of mercury does not seem to find much favour in the eyes of Dr. Malcolmson. "Innumerable cases clearly show," says that intelligent writer, "how erroneous the notion is, still very generally prevalent, that an extreme torpor of the absorbents exists in severe hepatitis, dysentery, and remittent fever, and that this is the cause why the largest doses internally, and the most assiduous inunctions externally, will sometimes fail in introducing a sufficient quantity of mercury to saturate the system. And hence the use of calomel in scruples and drachms daily, and rubbing in mercurial ointment without reference to quantity, under the idea that all that has been taken or rubbed in before has not entered the system, and can therefore have no effect on the disease or on the constitution. But if it be true that the mercury is absorbed, and mixes with the circulating fluids, how injurious must such practices be, when the medicine employed is one of such unequalled value in these diseases, but at the same time so energetic in its effects on the various tissues and

organs, and whose mischievous effects remain so long in the constitution that has been thus poisoned with it; and how little to be wondered at is it that many practitioners run into the other extreme of discarding it altogether, or of combining it with a severe and mischievous course of purgatives." (E. M. S. J. lii.)

C. CHRONIC AND STRUCTURAL DISEASES OF THE LIVER.

605. When we inquire into the purposes contemplated by practitioners in the administration of mercury in the chronic and structural diseases of the liver, we find that it is no longer the mere regulation of the secretion or excretion of the bile, nor the diminution of the force of the circulation, that are assigned as their motives; but the promotion of the absorption of such matters, not appertaining to the natural texture of the liver, as may have been deposited throughout its substance.

606. Of the power of mercury in stimulating the action of the absorbent system, many familiar illustrations might be quoted, as the disappearance of dropsical effusions under its administration alone, or in combination with diuretic medicines; the removal of the lymph effused in the inflammation of the iris; the diminution of indolent enlargements of absorbent or secretory glands; but these are salutary changes which nature occasionally accomplishes for herself, or with such aid only as is required to give fair play, as it were, to her own efforts; and with regard to mercury as to other resolvents, and perhaps all other medicines, it may be fairly questioned whether the practitioner ever effects, by its means, what nature never succeeds in accomplishing for herself — whether any of the structural alterations of the liver, not of an inflammatory character, ever disappear under, or in consequence of, its administration or use. A few quotations from authors of experience and intelligence will suffice to show on how dubious grounds the administration of mercury in the chronic and structural affections of the liver at present rests.

607. Mr. Thomas Clark, in his *Observations on Fevers and the Diseases of the West and East Indies* (p. 71–2), mentions that he had frequently known very bad effects produced (in liver diseases) by the too violent operation of mercury. "Nay, it has often appeared to me," says he, "that, even when it has removed the disease in the first instance, it has laid the foundation for a relapse, which proved fatal. The excessive debility occasioned by a violent mercurial course readily accounts to me for such consequences."

608. Dr. Falconer, in his *Dissertation on the Bath Waters*, in speaking of the visceral obstructions which take their rise in warm climates, observes, "Mercury copiously rubbed on the pained part in the form of an ointment, or taken largely internally, is an approved remedy in liver complaints in those countries; but amongst us, that remedy, in the instances in which I have seen it tried (and

I have seen several), appears to aggravate all the bad symptoms, and manifestly to hasten death."

609. Dr. Dick, whose experience in liver complaints both in India and in England was very extensive, also notices the great liability of these complaints to return when treated with mercury. (Saunders, p. 257.) "In chronic cases, where there is no fever," he remarks, "but only an obtuse pain in the side and shoulder, with a fulness in the side and about the pit of the stomach, keeping up a constant uneasiness, mercury seems to me to have but little good effect: when used freely, it removes the symptoms at the time, but they generally return as soon as the mercury is left off. Having been repeatedly baffled in this way, and observing very often that such liver attacks succeeded long courses of mercury undergone for the cure of venereal complaints, I have, for several years past, trusted to a seton or issue made in the side, and with success far beyond my expectation."

610. Dr. Pemberton has observed (p. 45-6), that, "if mercury is used where the structure of a viscus is totally destroyed, another source of disturbance is added to the system, without the diminution of any existing evil; so that, in fact, we subject the constitution to two sources of destruction, and thus the dissolution of the patient is rather accelerated than retarded." A very similar view of the use of mercury in this class of cases is taken by Dr. Saunders. "In hepatic diseases," says he, "where scrofulous tubercles are formed, and in other affections of the liver where the structure has been destroyed by interstitial deposit, with adhesive inflammation obliterating organization; where the absorption of parts has taken place, diminishing the bulk of the organ, with a structure both spongy and loose; if the jaundice accompanying these appearances be fixed and unremitting, I have never seen any advantage from the use of mercury. On the contrary, I am persuaded that life, which, under all these unfavourable circumstances, might have been prolonged by other means, such as a well regulated diet, and the moderate use of gentle, mild, opening medicines, has been shortened by mercury." (Observ. on the Hepatitis of India, p. 32.) And Dr. Farre, after describing the tubera circumscripta and tubera diffusa of the liver, remarks (p. 22), "Patients suffering under these diseases are not, as far as I have observed, benefited by the operation of mercury. Few medical men now attempt to cure by these means tumours, in the restricted sense of that word, at or near the surface of the body; but it is more especially true that such efforts prove altogether fruitless when directed to the cure either of the tubera circumscripta or diffusa; for by the time the most careful examiners can distinguish them, the progress of the disease has been already so considerable, that the mercurial action tends only to exhaust powers which art will subsequently in vain attempt to restore." "The perfection of medicine," this author has sagaciously added, "consists, not in vain attempts to do more than nature permits, but in promptly and effectually ap-

plying its healing powers to those diseases which are curable, and in soothing those which are incurable."

611. To the same purport are the sentiments of Dr. Cheyne (Dubl. Hosp. Rep. i. 278); "I shall now avail myself," says he, "of this opportunity of protesting against a rule of practice in these countries, which seems to have been established without sufficient consideration, namely, that a mercurial course ought to be instituted as soon as jaundice, from a diseased state of the liver, shall appear. Mercurials probably always aggravate the symptoms of hepatic irritation, unless when they promote the flow of the bile. In this way, they prove quickly destructive to persons advanced in life, with the leaden complexion which arises from what are usually called schirrous livers, which may be irritated by mercury, but over which mercury no longer possesses any influence in encouraging secretion."

612. In reference to the same class of cases, Dr. Abercrombie has observed, "Of the chronic affections of the liver, under the various forms which have been detailed, it will probably be admitted that a large proportion are beyond the reach of any human means. The treatment of these ought to be entirely palliative, consisting of a careful regulation of the diet and the bowels, with mild tonics, &c. This I conceive to be a point of much practical importance, because these affections often exist for a long time, without materially injuring the health of the patient; and by treatment entirely palliative, his life may be perhaps prolonged, and certainly rendered more comfortable. But when such cases are treated actively by courses of mercury, the strength uniformly sinks in a very rapid manner, and the patient's life is often evidently shortened."

613. "The salutary effects of mercury," says Dr. Chapman, "may perhaps, under all circumstances, be mainly ascribed to the promotion of the biliary and other secretions, and failing to do this, it proves inert and unavailing, or causes a train of deleterious consequences. In the management of chronic diseases of the liver of every description, these are considerations which should invariably control its use, continuing or discarding it, according to the mode in which it affects the system. Numerous are the instances which I have seen of hepatitis, as well as of jaundice, in which the condition was most conspicuously deteriorated by a neglect of these practical maxims, and some where irreparable mischief was entailed by a lengthened perseverance in this mistaken course."

614. "The use of mercury," says Mr. Marshall, in a MS. report of the sick treated at Fort Pitt, with a sight of which we have been favoured, "has been very generally recommended in what is called obstruction of the liver. If it be exhibited early in the progress of induration, and in very limited quantity, it may not do much harm. But if it be given in full doses after the healthy structure is obliterated, another disease will be added to the system

with little or no prospect of ameliorating the original source of physical disturbance. Frequent purging promises to be more useful in cases of this kind than the exhibition of any other class of medicines."

615. In the chronic liver enlargement, which is by no means uncommon in Bengal as a sequel to fevers both remittent and intermittent, Mr. Martin believes mercury to be injurious: it injures the stomach and bowels, already overdrugged, without exciting any secretion from the organ chiefly affected, and on which this mineral, from repeated use, has lost its effect. (P. 236.) "In the indolent enlargement, with torpid action of the liver," says the same author (p. 239), "I have seldom found mercury of use."

616. We may introduce here, also, an observation of Mr. Twining's, who, in speaking of enlargement of the liver as being not uncommon in Bengal, in children below four years of age, and of the means of cure, remarks, "Jalap and scammony, with calomel, are the most effectual purgatives, in the majority of cases attended with pyrexia;—but I am bound to say, that in nearly one-half of those cases of tumid liver which take place slowly in pale and delicate children, mercury is injurious." (i. 369.)

617. In multiplying, as we have done, our quotations relative to the prejudicial operation of mercury in the chronic and structural diseases of the liver, we are influenced by the apprehension that, numerous and eminent as are the authorities from which these warnings against its use, in this class of cases, have proceeded, they are too frequently neglected in practice; partly in consequence of vague notions entertained by many medical men of mercury being a *panacea* in hepatic diseases; partly from want of reflection on the great variety that exists in the diseases to which the liver is subject; partly from the difficulty experienced in distinguishing them from one another when a diagnosis is attempted; and partly, perhaps, also, from compliance with popular opinion.

618. Before concluding this part of our subject, we would request attention to the fact, that the authorities whom we have quoted on the disadvantages frequently attending the administration of mercurial medicines in diseases of the biliary organs, and on the number of circumstances in which their use may be dispensed with, leave no pretence for drawing a distinction on these points between different climates. Dr. Saunders, whose experience in this branch of practice in England was very extensive, whilst he conceived that mercury can be used with more safety in warm than in cold countries, at the same time expressly says (Observations on the Hepatitis of India, p. 44), "The abuse of mercury, even in India, has been admitted by the writers of that country, and we have daily opportunities of observing the number of persons who return from India to Europe, with debilitated constitutions from the use of mercury, considered as so necessary to check the liver-diseases of that continent. Many recover their strength in their passage home; others arrive in a mere convales-

cent state, and require the aid of medicine and diet perfectly to restore their health. One very common effect of the excess of mercury is mental derangement, both in India and Europe." "Although," says Dr. Lind (Lond. Med. Jour. viii. 47), "the universal practice in the East Indies of curing hepatitis by mercury sufficiently proves its power of checking inflammation, yet it is at times attended with several inconveniences, such as bringing on a violent mercurial diarrhoea, by the medicine being thrown in hastily, which must always be done, otherwise, in this disease, suppuration would soon come on; and in some cases the salivation runs so high as to be truly troublesome. In one instance of chronic hepatitis, I saw a mercurial hemoptoe brought on by a long use of mercury; and constantly the patients are so much debilitated by taking mercury, that it is a considerable time before they perfectly recover their former strength in a warm climate. When the hepatitis has been induced by a remittent fever, or diseases accompanied with putrescency, the use of mercury is always attended with the worst consequences." (See Cases of Mercurial Erethism related by Dr. Conwell, Treatise, p. 410.)

NITRO-MURIATIC ACID.

619. To those who participate in the opinion we have ventured to express, that mercury, from its frequently injurious operation on the economy, even when very cautiously administered, should not be used when the same results can be obtained by other means, and who are, at the same time, impressed with the belief that the affections of the biliary organs require for their treatment remedial agents of a specific character, it cannot but be gratifying to find in how high estimation the employment of what has been called the Nitro-Muriatic Acid,* internally and externally, is held by Indian practitioners in the treatment of these diseases; and how closely the effects of this remedy are conceived to correspond with those of a salutary character obtained from mercury itself.

620. The use of nitro-muriatic acid as a substitute for, or as an adjuvant to mercury, in the treatment of affections of the biliary organs and other complaints, originated with Dr. Helenus Scott, who printed a paper on the subject in India in 1796. At first, he administered the remedy internally; and although he had reason to be satisfied with the general effects derived from its internal use, yet this was attended with considerable inconvenience. He found, however, that a bath of this acid, sufficiently diluted with water, produced equally agreeable results. Subsequently he ascertained that the mere sponging the skin with nitro-muriatic acid, sufficiently diluted, gives rise to the very same effects as bathing, and

* *I e.*, a mixture of nitric and muriatic acid, attended with mutual decomposition of which water, chlorine, and nitrous acid are the results.

is more easily applied. Dr. Scott has explained very fully the progress of his observations relative to this remedy, the mode of administering it, and its beneficial effects, in a paper published by him in the 8th vol. of the *Medico-Chirurgical Transactions*, to which we beg to refer our readers. In a postscript, Dr. S. mentions that several of his friends had become convinced with him that the very same effects arise from a diluted solution of chlorine in water, as are produced by the nitro-muriatic acid; an opinion since adopted and illustrated by Mr. Wallace of Dublin, in his work on the *Medical Powers of Chlorine*, particularly in *Diseases of the Liver*.

621. One of the first authors who supported the character of the nitro-muriatic acid as a substitute for mercury, was the present distinguished Director-General of the Army Medical Department. In his account of the diseases of the 88th regiment, &c., Sir James M'Grigor mentions that in the treatment of dysentery and hepatitis, the nitric acid was tried in about two hundred cases, and in general with great success. "One fact," says Sir James, "we are clear and decided in, that the injury to the constitution is infinitely less from the acid than from the mercurial ointment, and that men are not half the time convalescent from the first that they are from the last remedy." In his *Medical Sketches of the expedition from Egypt to India*, published in 1804, Sir James again alludes to the use of nitric acid as a practice from which, on a large scale, for the six previous years, he had observed the best effects, and as one likely to get into general use in India.

622. These anticipations seem to have been, in a great degree, realized. Mr. Annesley concludes his observations on the treatment of active inflammations of the liver, with the following statement:—"There are very few remedies which are more deserving of notice than the nitro-muriatic acid wash, and the internal use of nitric acid, in cases of acute hepatitis, after active depletions and mercury have been used. They promote the return of strength, and the healthy establishment of the biliary secretion; and if deobstruent laxatives, with suitable regimen, be prescribed and adhered to during their use, they remove obstructions, and promote a free circulation in the vessels of the liver. As a restorative of the energies of the system after mercurial courses, they have generally proved beneficial in our practice, particularly when conjoined with the cautious exhibition of gentle tonics, with light but nutritious diet, and suitable regimen." And, again, the same author says, "We have experienced the most decided advantage from this medicine in all functional disorders of the liver. In the more chronic forms of disease of this viscus, more particularly such as are connected with enlargement of its structure, and a morbid state of the biliary and intestinal secretions, we consider it one of the most valuable remedies we possess."

623. In 1817 a trial was made, under the immediate inspection of Dr. Helenus Scott, at the York Hospital, Chelsea, of the effects of the nitro-muriatic acid baths on patients labouring both under

hepatic and under syphilitic complaints. From the report upon this trial, which was drawn up by Staff-Surgeon Macleod, and which has never, so far as we are aware, been published, we shall take the liberty to make a few extracts.

624. Our first extract relates to the manner of administering the nitro-muriatic acid bath. "In conducting these experiments," says Dr. Macleod, "we have uniformly used an acid composed of two parts of nitric and three of muriatic acid, each being diluted with an equal quantity of water previous to their being mixed together, which was done by pouring them into a bottle properly graduated. Of this mixture we used from one to four ounces to a gallon of water, and of a temperature of from 90° to 100° Fahr. The mixture thus prepared is poured into a narrow wooden tub, so constructed as to enable the patient to sit down in it with his legs at full length. It is capable of holding from twelve to fourteen gallons, and of such a height that the whole of the lower part of the body, as high as the loins, is covered, and exposed to the influence of the acid liquor in the manner which creates the smallest consumption of the acids. The patient is directed to remain in it from a quarter to half an hour every evening, or even longer, if no sense of lassitude or faintness is caused by it. In most cases, the upper part of the body may be washed or spunged with the acid liquor, and it will be of advantage to cover the patient with a sheet or cloth, so as to preserve the bath of nearly uniform temperature during the time of immersion. At each time of using the bath, four gallons of the acid liquor are poured out, and an equal quantity of boiling water, with a proportionate quantity of fresh acid, is added, in order to bring it to the proper temperature. By this plan, a fourth part of the whole is daily lost; but we apprehend a diminution of the powers of the remedy, from exposing the acid already mixed to the action of heat, and no better means have been yet devised to obviate this risk of deterioration than that which we pursued.

"In cases in which the whole bath was thought to be too powerful, the pediluvium was preferred. The vessels used for this purpose were long narrow earthen jars, by which only the feet and legs, as high as the knees, were exposed to the action of the remedy. These, like the wooden baths, are constructed on the principle of exposing as much of the surface of the body, with as small a consumption of the acid as possible. In one case warm spunging only was employed, in consequence of the patient being covered with irritable sores; and in another case the mere washing of the feet and hands was found fully sufficient to induce the specific effects of the remedy."

625. Our next extracts bear reference to the sensible effects which the bath seemed to induce on the several functions of the economy. "It is chiefly on the natural functions," Dr. Macleod observes, "that the nitro-muriatic acid exerts the peculiar influence it possesses. In the greater number of cases under our observation, it caused a particular taste in the mouth, which some of the patients

termed a bitter taste, while others compared it to that of copper. This, on examination, was found to be attended with a redness and swelling of the gums, followed by an increased discharge from the salivary glands, but without any ulceration or fœtor similar to that which takes place under mercurial influence. This increased flow of saliva, although one of the most constant effects, is not always present; for in some cases the remedy has altogether failed in producing any effects on the mouth. But it was not remarked that its salutary influence was less in these cases than in the others, and it does not from this appear that this effect is at all a measure of the power which it is capable of exerting on the system.

The acids seem to exert their principal influence in producing a change in the secretions of the liver and intestines; and when the bowels are not excessively torpid, they hardly fail to render them more regular. In many cases the bath causes actual purging, attended with severe griping, and a sensation of heat and scalding about the anus while the stools are passing, which are in general of a very dark colour, and extremely fœtid.

"The most salutary, and what has been remarked as a very general result of the action of the nitro-muriatic acid bath is its effect in increasing the powers of the digestive organs, and, in consequence, improving the general health of the patients. There has been hardly a case under trial in which this effect was not remarked in some stage of its progress; and, in general, the appetite, a few days after commencing it, became equal to that of a person in health using his accustomed exercise."

626. Our last extracts have reference to the influence which this remedy appeared to exercise over the different forms of hepatic disease in which it was employed.

"In chronic hepatitis without organic derangement, as abscess, tubercles, &c., all the patients," it is stated, "appear to have received more or less benefit. In some of them, the pain in the hepatic region has entirely disappeared, in others a sense of weight remains, and sometimes, on sudden motion, a feeling as if the parts were stretched; and in all, even where a certain degree of uneasiness and pain is still present, the general health has improved, and the countenance has lost the dusky sallowness so characteristic of hepatic derangement. It may also be observed that the amendment began very soon after the bowels were affected by the remedy; and an improvement in the appetite was one of its most early and most constant effects.

"In cases where the substance of the liver has been destroyed by ulceration, and considerable quantities of matter formed, little benefit could be expected from any treatment, and the acid baths have not been more successful than the means usually employed. In all the instances of this description under treatment, the local pain remains with little change, but the general health has notwithstanding improved in a very marked degree.

"Two cases of chronic hepatitis, with effusion into the cavity of

the abdomen, both got well in a short time under the use of the bath without any other remedy. In neither," it is candidly stated, "was the effusion very considerable, or very perceptible."

"The bath was tried in three cases of chronic hepatitis, complicated with dysentery. Two of these were perfectly cured of the hepatic and dysenteric complaints. The third died of the progress of the hepatic affection, but for a considerable time previous to his death the dysentery was much relieved; so that altogether," Dr. Macleod considers "the remedy produced in this class of cases the most salutary effects."

"From a consideration of the facts that have been stated," concludes Dr. Macleod, "it will appear that our experience of the nitro-muriatic acid bath will lead to the inference that it is in morbid action of the liver, and in diseases depending on disordered action only without disorganization of structure, that we must expect the greatest benefit from the employment of this remedy."

627. In perusing these and similar statements relative to the physiological and therapeutical phenomena which manifested themselves during the use of the nitro-muriatic acid, we are naturally led to ask ourselves what portion of these phenomena was actually produced by the agency of this medicine; what portion was produced by the agency of other powers, the operation of which was not attended to, or not sufficiently appreciated; and what portion may fairly be ascribed to the desistance from measures of treatment of a less innocuous character, which the trial of this remedy insured. As it does not, however, appear that the employment of the acids is productive of any injurious consequences to the economy, the determination of these questions is of considerably less practical importance than that of those respecting the claims of mercury to be considered as the source of those various, and as we have seen, somewhat incongruous, effects which are ascribed to it.

TARAXACUM,

628. As a remedy which has enjoyed considerable reputation in the treatment of the chronic affections of the biliary organs, we may here mention *Taraxacum*, of which it may at least be said, that if it has not been the cause of all the good which has been ascribed to it, its employment is not attended with the same risks as that of some more active substances. Boerhaave entertained a very favourable opinion of its services in the removal of biliary calculi. Dr. Pemberton states (p. 42-3, and note), that he has seen the most decided advantage from its use in the treatment of chronic hepatitis, both in incipient scirrhus (induration) of the liver, and also in several chronic derangements of the stomach. In such cases he recommends a pint of the infusion to be taken daily, in divided doses,—the infusion being made by adding a quart of

boiling water to ten fresh plants, root and leaf, and straining off the liquor as soon as it is cold. "The decoction or extract of taraxacum," says Dr. O'Brien, "requires to be given in the dose of at least half a drachm three times a-day. In one case, where this remedy was exhibited, the patient received so much relief that he thought himself cured, but the disease subsequently returned. The effect of this remedy was to impart a general warmth to the stomach, and to keep the bowels in a regular state, without relaxing them." (Dub. Med. Trans. i. 364.)

629. But here it is requisite that we should bring the consideration of the treatment of the diseases of the Biliary Organs to a conclusion. For the omission of several remedies, the utility of which, in some of these diseases, has many attesters and believers, we shall excuse ourselves in the following words of Dr. Coe, which, if they may appear obsolete as respects some of the illustrations given of the principles they are intended to enforce, are not, it must be allowed, obsolete as respects the principles themselves. "We should have a large and wild field to wander in," says that philosophic physician, "if we were to take particular notice of all those medicines which, for one reason or another, or from prejudice and whim, without any reason at all, have been recommended, and handed down by traditional writers, one after another, as remedies in icteric cases in general; or even of all which are mentioned by Hoffmann and Bianchi, under the cure of biliary calculi. It is not at all strange that the vulgar should be amused with the greatest trifles under the name of remedies; that they should believe that almost anything of a yellow colour must be good in a jaundice, even a tench outwardly applied, because it is a yellow fish; that a jaundice may be cured by a little powder of goose-dung, or of earth-worms, and the like; or by swallowing nine lice for six mornings successively; or by tricks played with the patient's urine, &c. But that such things should be at all credited by grave and celebrated physicians, so lately as in the last (*i. e.* the 17th) century, and that these learned men should report such sort of cures, and labour at the etiology of them, seems very surprising. Can we wonder at any charms, or ridiculous pranks played by the vulgar, after reading such things recorded by learned men, as curing the jaundice *per transplantationem*, which was to be done by the patient's pissing upon an ant-heap, or of the *cura sympathetica*, by giving to a hungry dog cake, made of the recent urine of the patient and wheat-meal? Or can we forbear astonishment to find the late famous Hoffmann, so few years ago, advising the powder of the elk's hoof and of a young hare cut out of the dam's belly, as remedies against the convulsions occasioned by these biliary calculi? Can we fail to be amazed that so great a practitioner could, upon any authority, be brought to imagine that one single dose of half a drachm of curcuma could ease the most violent pain, and expel calculi from the biliary duct and quite out of the body, within two hours? Should

he not rather have concluded that the stones were actually passing the duct when that dose was given, and that some of them had passed it long before, either by the efforts of nature, or by the help of the other remedies that had been used ; and that the pain ceased, not from the virtue of the medicine, but because all the stones had by that time passed the duct, as they would doubtless have done if it had never been taken ? The vulgar are apt to call every recovery a cure, and to impute it to the last thing taken as a medicine, especially if it was of their own prescribing, whether it has any virtue or not ; and to overlook all the means used before, though they perhaps have been operating gradually, and have at length produced the effect which that last thing unjustly obtains the credit of. But surely a physician should judge better, and be very cautious of ascribing effects to inadequate causes, and much more to improbable and absurd ones."

APPENDIX.

IN submitting the following Tables to the consideration of the profession, we proceed on the principle so well stated by Sir John Pringle, in reference to certain calculations introduced by him into his work on the Diseases of the Army. "The data are perhaps too few to deduce certain consequences from them, but, as I found no other which I could depend upon, I was obliged to make the best use of these, which, at least, will serve for a specimen of what may be done in this way upon further experience." From the zeal with which statistical knowledge of every kind is at present cultivated, we cannot but hope that more ample data for the illustration of several of the points to which these Tables relate, as well as of other analogous topics, will ere long be collected.

The four following Tables exhibit the Weight of the Liver in persons who died of different diseases and in different climates.

TABLE I.

Shows the Weight of the Liver in 132 persons who died in the Royal Infirmary of Edinburgh, whose bodies were examined, after death, by Dr. John Reid, Pathological Clerk.

Weight.			Died in consequence of		Total.
			Acute Diseases.	Chronic Diseases.	
lb. oz.	lb. oz.				
From 7 0 to 6 8			1	2	3 or 1 in 44. cases.
6 8 6 0			..	3	3 . . 44. . .
6 0 5 8			..	..	0
5 8 5 0			3	1	4 . . 33. . .
5 0 4 8			2	5	7 . . 19. . .
4 8 4 0			4	6	10 . . 13.2 . .
4 0 3 8			14	7	21 . . 6.3 . .
3 8 3 0			18	4	22 . . 6. . .
3 0 2 8			16	14	30 . . 4.4 . .
2 8 2 0			8	6	14 . . 9.4 . .
2 0 1 8			3	2	5 . . 26.4 . .
1 8 1 0			5	4	9 . . 14.6 . .
1 0 0 10			4	..	4 . . 33. . .
			78	54	132

TABLE II.

Shows the Weight of the Liver in the same persons, according to different periods of Life.

Period of Life.		Died in consequence of				TOTAL DISEASES.	
		ACUTE DISEASES.		CHRONIC DISEASES.			
		No.	Average Weight.	No.	Average Weight.	No.	Average Weight.
Years.			lb. oz.		lb. oz.		lb. oz.
From 70 to 60		4	2 14	..	. . .	4	2 14
60 .. 50		8	3 1	5	3 4	13	3 2
50 .. 40		16	3 6	7	3 13	23	3 8
40 .. 30		15	3 9	15	3 4	30	3 9
30 .. 20		15	3 10	18	3 13	33	3 12
20 .. 10		10	2 13	9	3 3	19	3 0
10 .. 1		10	1 1	..	. . .	10	1 1
		78	3 1	54	3 8	132	3 4

TABLE III.

Compiled from manuscript materials collected by Mr. Marshall, while he was staff-Surgeon at Kandy, shows the Weight of the Liver in 176 Soldiers of various races, dying in Ceylon; namely, Europeans 140, Indians 14, Malays 15, and Africans 7.

Weight.		Endem. Fever.	Died in consequence of												Total.	
			Dysentery.				Dysentery and Liver Diseases.			Other Diseases.						
			European.	European.	Indian.	Malay.	African.	European.	Indian.	Malay.	European.	Indian.	African.	Malay.		
lb. oz.	lb. oz															Cases.
From 10 0 to 6 8	6 8	1	.	.	.	.	.	.	.	.	.	.	.	.	1 or 1 in 176	
6 8 6 0	6 0	1	.	.	.	.	.	.	1	.	.	1	.	.	3 1 58	
6 0 5 8	5 8	1	2	.	.	.	.	.	.	.	.	.	.	.	3 1 58	
5 8 5 0	5 0	9	3	.	.	.	.	.	1	.	.	.	.	.	13 1 13	
5 0 4 8	4 8	26	12	.	.	1	.	3	.	.	.	1	.	.	43 1 4	
4 8 4 0	4 0	16	13	.	.	2	.	.	.	.	.	1	1	1	34 1 5	
4 0 3 8	3 8	14	15	1	.	.	.	1	.	3	1	1	1	1	38 1 4	
3 8 3 0	3 0	2	3	1	3	1	2	1	.	1	.	1	.	1	2 17 1 10	
3 0 2 8	2 8	1	3	1	1	1	1	.	.	1	1	1	1	1	12 1 14	
2 8 2 0	2 0	..	2	3	2	.	1	1	.	.	1	.	.	.	10 1 17	
2 0 0 0	0 0	..	..	2	.	.	.	.	.	.	.	.	.	.	2 1 88	
		71	53	8	8	3	10	2	3	6	4	4	4		176	

TABLE IV.

Shows the Mean Weight of the Liver in the same persons.

Race.	No	Endemic Fever.	No	Dysentery.	No	Dysentery and Liver Disease.	No	All other Diseases.	No	Total.
		Average Weight.		Average Weight.		Average Weight.		Average Weight.		Average Weight.
		lb. oz.		lb. oz.		lb. oz.		lb. oz.		lb. oz.
European,	71	4 10	53	4 2	10	4 2	6	4 1	140	4 6
Indian, . . .	..	..	8	2 8	2	2 12	4	3 4	14	2 12
Malay, . . .	..	..	8	3 3	3	3 12	4	3 7	15	3 6
African, . . .	..	..	3	3 11	..	..	4	3 7	7	3 8

TABLE V.

Showing the number of Admissions into Hospital, and Deaths by diseases of the Biliary Organs among the British Troops serving in the under-mentioned Stations. (Compiled from the Statistical Reports on the Sickness, &c., of the British Army.)

	Period of observation.	Mean Strength.	Acute Hepatitis.			Chronic Hepatitis.			Jaundice.			Total Hepatitis and Jaundice.							
			Admitted into Hospital.	Died.	Proportion of deaths to admissions.	Admitted into Hospital.	Died.	Proportion of deaths to admissions.	Admitted into Hospital.	Died.	Proportion of deaths to admissions.	Admitted into Hospital.	Died.	Proportion of deaths to admissions.	Ratio per 1000 of mean strength.		Ratio to admissions and deaths from all diseases.		
															Admitted.	Died.			
HOME STA- TION. . .	7½	44,611	117	61	19½	121	11	11	99	2	1 in 49½	337	191	in 17½	8	.4	1 in 1231 in 33		
MEDITERRA- NEAN. . .	19	60,260	331	71	in 47	257	11	1 in 23	171	4	1 in 43	759	221	in 34½	13	4.	1 in 761 in 58		
N. AMERICA, New Brunswick, Canada, . .	20	61,066	186	51	in 37	94	5	1 in 19	208	2	1 in 104	488	121	in 40½	8	.2	1 in 1371 in 81		
AFRICA. . .	6	5,908	102	101	in 10	63	14	in 4½	6	0	in 6	171	241	in 7	29	4.	1 in 251 in 6		
W. INDIES.	20	86,661	903	79	in 11	902	76	1 in 12	141	6	1 in 23	1946	161	in 12	22	1.8	1 in 841 in 42		
E. INDIES..	12	127,925	336	27	in 12	109	20	1 in 5½	94	4	1 in 23	539	51	in 11	10	1.	1 in 1731 in 122		

* As respects these Stations, no distinction is made between Acute and Chronic Hepatitis.

TABLE VI.

Comparative View of the Mortality among White and Black Troops from Diseases of the Biliary Organs.

	Period of observation.	STRENGTH.		Ratio of Deaths from these Diseases, per 1000 of Mean Strength.	
		White Troops.	Black Troops.	White Troops.	Black Troops.
	Years.				
British Guiana, .	20	17,689	3,300	1.	.3
Trinidad, . . .	20	6,197	8,309	1.1	.8
Tobago, . . .	20	3,402	2,101	2.	1.
Grenada, . . .	20	6,267	1,899	4.5	1.
St. Vincent's . .	20	7,432	1,075	1.6	. .
Barbadoes, . .	20	23,936	8,921	1.4	.9
St. Lucia, . . .	20	4,814	6,606	1.	.9
Dominica, . . .	20	4,723	2,454	1.7	1.6
Antigua & Montserrat, . . . }	20	8,062	3,562	2.8	1.7
St. Kitt's, Nevis, and Tortola, . }	20	5,800	1,426	2.2	.7
Jamaica, . . .	30	51,567	5,729	1.	.4
Bahamas, . . .	20	535	7,102	1.8	.1
Honduras, . . .	15	320	4,356	. .	.8
Western Africa, .	18	4,843	7,581	6.	1.1
Cape of Good Hope,	19 & 13	22,714	4,136	1.1	.5 Hottentots.
Mauritius, . . .	19 & 12	30,315	1,395	4.	5.7
Madras, . . .	12	127,925	769,872	5.62	.11 Natives.

TABLE VII.

Showing the Number of Seizures (admissions) and Deaths by Inflammation of the Liver, occurring in seven years (1830 to 1836) in three Squadrons of the Royal Navy. Compiled from the Statistical Reports on the Health of the Navy.

Stations.	Total number of Cases.	Total invalided.	Total Deaths.	Ratio attacked, per 1000 of Mean Str'gth.	Ratio Invalided, per 1000 of Mean Str'gth.	Ratio died, per 1000 of Mean Str'gth.
S. American Squadron, }	282	37 or 1 in 7.23 cases.	7 or 1 in 40.2 cases.	16.4	2.1	.4
W. Indian & N. American Squadron, }	353	94 or 1 in 3.71 cases.	5 or 1 in 70.3 cases.	15.	4.	.2
Mediterranean and Peninsular Commands, }	403	25 or 1 in 16.3 cases.	12 or 1 in 33.7 cases.	7.2	.5	.2

TABLE VIII.

Showing the results of the cases of Hepatitis, Liver Disease, and Jaundice, treated in the Hamburgh Hospital in 1824 and 1825.

Diseases.	Admissions.			Recoveries.			Deaths.			Remained.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Hepatitis, .	12	4	16	8	2	10	2	..	2	2	2	4
Liver Disease,	21	4	25	9	2	11	9	2	11	3	..	3
Jaundice, .	15	4	19	11	4	15	3	..	3	1	..	1
Total, .	48	12	60	28	8	36	14	2	16	6	2	8

TABLE IX.

Showing Mortality occasioned by Diseases of the Biliary Organs, in the Royal Infirmary of Glasgow, during the years 1829, 1830, and 1831 (three years), and among the Patients treated at their own houses by the District-Surgeons of that City, from 1st of August 1827 to 1st February 1832 (four and a half years).

		Cases.	Deaths.	Ratio of Deaths to Cases.	Ratio of Deaths to those from all Diseases.
Hepatitis,	Infirmary, .	68	11	1 in $6\frac{2}{11}$	1 in $63\frac{9}{11}$
	District Surgeons, .	341	15	1 in $22\frac{12}{13}$	1 in $57\frac{14}{13}$
	Both, . .	409	26	1 in $15\frac{19}{26}$	1 in $59\frac{22}{26}$
Jaundice,	Infirmary, .	12	1	1 in 12	1 in 702
	District Surgeons, .	46	2	1 in 23	1 in 427
	Both, . .	58	3	1 in $19\frac{1}{3}$	1 in $518\frac{2}{3}$
Hepatitis, and Jaundice,	Both, . .	467	29	1 in $16\frac{3}{29}$	1 in $53\frac{19}{29}$

TABLE X.

Showing the Admissions into Hospitals, and Deaths by Diseases of the Biliary Organs among the Troops serving in Scotland from 1816 to 1822 inclusive: their aggregate Mean Strength being 20,825. From Mr. Marshall's Observations on the State of Health of the Troops in North Britain, &c.

	Admissions.	Deaths.	Proportion of Deaths to Admissions.	Ratio per 1000 of Mean Strength.		Ratio of Deaths to Deaths from all Diseases.
				Admissions.	Deaths.	
Acute Hepatitis,	47 }	5	1 in 17.4	2.2 }	.02	1 in 46
Chronic, &c., .	40 }			1.9 }		
Icterus, . .	38		0 in 38.	1.8	..	
Total,	125	5	1 in 25	6	.02	

TABLE XI.

Showing the Admissions and Deaths, by Diseases of the Biliary Organs, in the regimental Hospitals of the British Army in the Peninsula, from 21st Dec. 1811 to 20th June 1814. Compiled from Sir James Macgrigor's Sketch of the Medical History of the British Army in the Peninsula, &c. (Med. Chir. Trans. vi.)

Disease.	Admitted.	Died.	Ratio of Deaths to Admissions.	Ratio of Deaths to Deaths from all Diseases.
Hepatitis,	290	23	1 in 12.6	1 in 167
Icterus,	...	2	. . .	1 in 1920.5

TABLE XII.

Showing the Deaths, by Diseases of the Biliary Organs, occurring in all the Hospitals, General and Regimental, of the British Army in the Peninsula, excluding French Prisoners, but including extra Patients, years 1812, 1813, and 1814.

Diseases.	Deaths.	Ratio of Deaths to Deaths from all Diseases.
Hepatitis, .	36	1 in 471.3
Icterus, . .	6	1 in 2828

The two following Tables, compiled from the Appendices to the First and Second Annual Reports of the Registrar-General, show the actual and relative Mortality occasioned by Diseases of the Biliary Organs, in England and Wales.

TABLE XIII.

Of 148,701 Deaths registered from 1st July to 31st December 1837, (75,159 being of Males, and 73,542 of Females), 1909 were caused by diseases of the Biliary Organs; viz. —

	Males.	Females.	Total.	Deaths from all Diseases.
Hepatitis, . .	91	92	183 or 1 in 812	
Jaundice, . .	211	194	405 — 367	
Liver Disease,	716	605	1321 — 112	
Total,	1018 or 1 in 73	891 or 1 in 82	1909 or 1 in 77	
Deaths from all Diseases.				

TABLE XIV.

Of 342,529 Deaths registered in 1838 (175,044 of Males, and 167,485 of Females), 3880 were caused by Diseases of the Biliary Organs; viz. —

	Males.	Females.	Total.	Deaths from all Diseases.
Hepatitis, . .	242	207	449 or 1 in 762	
Jaundice, . .	405	436	841 — 407	
Liver Disease,	1432	1158	2590 — 132	
Total,	2079 or 1 in 84	1801 or 1 in 92	3880 or 1 in 88	
Deaths from all Diseases.				

DISEASES

OF

THE LIVER AND SPLEEN.

BY WILLIAM TWINING,

Member of the Royal College of Surgeons of London; First Assistant Surgeon,
General Hospital, Calcutta.

DISEASES OF THE LIVER.

DISEASES of the liver occur so often among Europeans, in combination with the Fevers and Alvine Fluxes of Bengal, that it is hardly possible to give a correct and complete account of Hepatic affections without alluding to the cases wherein Fever or Dysentery may have been the original or more important complaint, to which the liver affection has supervened. It may serve to convey some idea of the various Hepatic diseases which take place in this country, if a general statement be given of the morbid conditions I have met with in the liver and its appendages in the course of several years. We must at the same time bear in mind, that many liver diseases do not prove fatal in their early and acute stages; and therefore the first marks of disorganization are not often to be met with in post-mortem examinations, unless on the rare occurrence of a person dying from accident when his disease is commencing. Moreover the functional disorders of the liver, which are considered numerous and important, do for the most part elude anatomical investigation; and I apprehend that the number of those which are said to exist, would very much diminish, if a critical inquiry were instituted respecting their pathology. It must be acknowledged, that functional disorders of the liver are often assumed to exist, on very vague and trivial grounds; and modes of treatment adopted, in consequence of some imagined affection of the liver, which are often unnecessary; and it is to be feared sometimes absolutely injurious. The uncertainty of the results of treatment pursued on such grounds is much to be lamented. I trust, we shall not meet many practitioners in the present day who are satisfied, without any distinct evidence on the subject, to ascribe every obscure chronic disease to some functional disorder of the liver; and who suppose they are acting on reasonable principles,

while they injure the constitution by persistence in the use of mercury.

The following morbid appearances have been observed in the liver and its appendages, in the subjects which I have dissected in this country. Those diseased conditions first mentioned have been the most frequent, nearly in the order now stated.

1. Morbid changes in the gall-bladder: the two opposite conditions of which part appear, in some measure, to depend on the period of the person's residence in India.

α The gall-bladder increased in size, and distended with bile; by the pressure of which, the sulcus at the right lobe of the liver, for lodging the gall-bladder, becomes enlarged and deep. This state is most common in persons recently arrived in India.

β The gall-bladder decreased in size, and disproportioned to the large sulcus in which it is lodged. In many of these cases, a false membrane is found covering the gall-bladder, and sometimes agglutinating it to adjacent parts. This morbid condition occurs in persons long resident in Bengal.

Frequent repletion, and habitual over-excitement of the gall-bladder, and irritation of parts in its vicinity, with a disordered state of the upper portion of the intestinal canal, give rise to transient and circumscribed inflammation; which is followed by a deposition of coagulable lymph, that covers the gall-bladder: while a similar exudation sometimes occurs in the cellular structure of the capsule of Glisson. This lymph soon becomes organised, and like other newly formed parts of a similar nature, it is after a time subject to absorption and shrinking; whereby the gall-bladder, which had been formerly enlarged by frequent over-distention, becomes ultimately contracted. In the course of numerous dissections, we meet with every intermediate change in these parts, during the transition of disease from one condition to the other. In the early and more active stages of these circumscribed inflammations, the pain is acute, and at times attended with some pyrexia. The pain at the part affected returns often during many years; it is ultimately attended with no constitutional affection, and is then little noticed by the patient.

2. Enlargement of the liver; its colour being darker than in a healthy condition from morbid accumulation of blood: the texture of the organ when in this state, usually softened; and the section made with a knife, bleeding freely; the peritoneal surface often marked with numerous clusters of minute vessels, like the veins on the nose of an old gourmand.

3. Abscesses of the liver. These vary much in appearance; and their peculiarities seem in some instances influenced by the existing diathesis of the constitution. At present, I will hardly venture to do more than enumerate the morbid conditions that have been observed.

α A large quantity of puriform matter in a cavity, the contiguous parts of the liver exhibiting not much appearance of disease. The contents of the abscess are frequently a dark-brown, or reddish serum, and then the adjacent parts of the liver

are softened and gorged with blood. The acute abscesses which form in the course of fevers, acute dysentery, and in drunkards.

β In other cases, there is only a small quantity of matter, compared with the extent of the disorganization; a considerable portion of the disease consisting in a quantity of large, tough, white or grey sloughs, hanging from the sides of the cavity, and nearly filling it: the parts on dissection much resembling the advanced stage of a large carbuncle. This disease more frequently happens in scorbutic subjects than in others.

γ In a few cases, we find a circumscribed abscess, the size of an orange: the matter deeply seated, and contained in a cavity, which is bounded by a thick coat of coagulable lymph.

δ Numerous small abscesses, the size of a filbert, dispersed through the substance of the liver; the cavities of some, lined with a thin coat of coagulable lymph; others without any lining, appearing as if scooped out with a sharp instrument: the intervening parts of the liver soft, but not otherwise diseased. This morbid appearance is rare; it sometimes exists without much evident tumefaction of the liver. The subjects have been mostly delicate, and of scrofulous constitution.

On inspecting the bodies of persons who have died suddenly from accidents or otherwise, I have several times met with appearances in the liver, which were considered to be the incipient or preliminary stage of abscess. These were, distinct, circumscribed, ecchymosed spots, at the concave surface of the liver; and serious interstitial effusions into the structure of that organ, near its convex surface: the latter spots, if diffused and extensive, rendering the part very soft for a considerable space. These may be considered the early changes induced by acute disease, not very rapid in its progress; and had the patients not died suddenly from other causes, these effusions would have probably terminated in abscesses, if not treated in the most judicious manner for a long time.

In dissection of subjects who died of Abscess of the Liver, I have twice found a small quantity of puriform matter in the right ventricle of the heart; and in both instances was able to trace the same appearance, with small filamentous coagula, quite into the veins of the liver. The internal membrane of the hepatic veins was inflamed, but I could not discover any communication between the abscess of the liver and these vessels; and am therefore disposed to ascribe the formation of pus, to inflammation of the hepatic veins. Both these patients were recent arrivals in India, not of very temperate habits, and their complaints began as common Diarrhœa of severe description. On referring to their cases, the only difference observed between these and the usual course of Liver Abscess, was the more active pyrexia in the early part of the disease; and towards the conclusion unquenchable thirst, extreme anxiety, and frequent disposition to faint: but the patients never complained of palpitation, or any other symptom directly referred to the heart. In these cases, some degree of morbid heat of skin continued to the last.

4. Adhesions of the liver to the diaphragm, colon, or stomach, with more or less thickening of the peritoneal coat. It is surprising how often suppuration of the liver occurs without any adhe-

sions of its peritoneal coat to adjacent parts, although the abscess be near the surface.

5. Black discoloration of a part of the liver. The concave surface towards the anterior edge more commonly affected than any other part; this discoloration in some cases does not extend above half an inch into the substance of the liver, and it is rare that so much as the surface of half of one lobe undergoes this change of colour: it is usually attended with some softening of the structure of the liver. This morbid condition has been observed in patients who have died after lingering febrile affections; and in whom there had been no very distinct indications of liver diseases during life: it has also been occasionally noticed in the post-mortem examinations of Dysenteric subjects. I have not observed this appearance in those persons who died dropsical. We are not certain what has been the state during life of the parts which are found after death discoloured as above described: I am disposed to consider the local diseased action during life to have been a slow inflammatory description, with great congestion.

6. Tumours, varying from the size of a grain of barley to the size of a bean, situated in the capsule of Glisson. Two small bodies can always be found by careful dissection, which, from their structure, appearance, and uniformity of situation, I am inclined to believe are absorbent glands. One of them is situated near the termination of the gall-bladder in the cystic duct; the other at the upper part of the ductus communis choledochus. Enlargement of these bodies, with inflammatory excitement about the capsule of Glisson, may cause closure of the biliary ducts. I have found the ducts obliterated, exactly at the point where these enlarged glands were causing pressure. If my view of the influence of these parts in disease be correct, we shall have a satisfactory explanation of one mode in which transient obstructions to the flow of bile into the intestine are produced, from temporary irritation of these glands on the occasion of disorders in the vicinity; and we see a distinct reason for obliteration of the cystic or of the common duct in the chronic disease of old drunkards; which is just the description of subjects in whom the closure of the ducts most frequently takes place.

7. The liver is found enlarged, its colour being generally unchanged, though sometimes paler than in a healthy state; the surface of the organ distinctly marked by the pressure of the cartilages of the ribs. This affection seems analogous to the œdema of the lower extremities, though rather firmer; and when the surface of the liver is punctured with a needle it is seldom that any serum flows: a section of a liver in this state bleeds but little. The patients have all been pale for a long time, and labouring under Chronic Leucophlegmatic disorders.

8. The liver of pale slate-colour, with slight induration, and toughness of texture; the section bleeding but little: it has been seen in patients who were known to have had severe remittent fevers

about 18 months or 2 years previously; and after a period of tolerably good health, they were again attacked with fever, which proved fatal after a protracted struggle.

9. Enlargement with paleness of colour, texture somewhat softened; and leaving an oily stain on the knife with which a section of the liver is made.

10. Induration and enlargement, colour a pale drab; structure resembling cow's udder that has been boiled: the section bleeding very little. We sometimes see the same structure and colour in a liver that is decreased in size, and has its anterior edge rounded, notched, and adherent to the colon.

11. Puckered depressions, which appear like cicatrices on the convex surface of the liver; these are very rarely adherent to the adjacent parts. An incision through some of these shows induration from the deposit of coagulable lymph: though we find no condensation or fibrous structure, on making an incision through other marks which have the same resemblance to cicatrices.

12. Concretions, in colour and consistence like yellow soap, extending along the biliary canals, through a considerable space; the left lobe has been observed more frequently affected in this way than the right: it is a rare disease in Bengal.

13. Enlargement (relaxation?) of hepatic duct; this has been observed in patients of light complexion, long resident in India. They complained of Chronic Diarrhœa for a long time, the stools being numerous, copious, fluid, and of pale yellow colour.

14. Obliteration of the biliary ducts; only observed when the liver had undergone the change described in sections 9 and 10. The patients for the most part drunkards.

15. Tubercles dispersed through the substance of the liver.

16. Hydatids; most frequently found about the anterior edge, and at the fissure near the ligamentum latum.

17. Biliary concretions in the gall-bladder.

Acute Inflammation of the Liver is indicated by pain at the right hypochondrium, or at the epigastre; which is increased on pressure; there is enlargement or fulness in those regions; and more or less pain at the lower part of the chest, with impeded or oppressed respiration, and sometimes a cough. Bowels, at first, usually costive. The patient cannot lie easily on the left side; nausea and vomiting are often present, especially in the early stage of those acute cases where the concave surface is chiefly affected; I have seen a patient in whom the vomiting was so urgent and distressing, that it was mistaken for Cholera, and from omission of sufficiently active treatment at the commencement, abscess rapidly formed, and the patient died. In some cases there is pain at the top of right shoulder, and in others jaundice, though we do not often meet with either of these affections. The urine is generally high-coloured, the tongue loaded and moist; but these symptoms vary as much as the degree of pyrexia, which in the Hepatitis of Bengal is seldom of an ardent description. The con-

stitutional disorder attendant on incipient liver disease often commences like a common cold, or a slight fever; which goes on increasing for several days, without being much impediment to ordinary occupations. When the attack is more sudden, it is sometimes preceded by transient coldness, but there is rarely any rigor. The state of the pulse for the most part corresponds with the degree of fever present; but when suppuration has taken place, the pulse commonly rises above 108; and then symptoms of Dysentery almost always occur, in the latter stages of the disease.

Inflammation of the liver is often far advanced towards suppuration, without the patient having suffered much pain; but I have never seen a case terminate in abscess, without our being able, by a careful examination, to detect the disease that was in progress, long before there was any reason to believe that suppuration existed. The best mode of examination, is to place the patient on his back, on a couch, the head not being raised; removing the clothes from the chest and belly, and then to stand at the foot of the bed, so that we can see if the right side be enlarged, the cartilages of the ribs heaved up, or if there be more fulness at the right side of the epigastre than at the left. We must remember that inflammation sometimes takes place, and abscess forms in the left lobe only. We ascertain the existence of pain, or induration, by careful pressure over the right hypochondre; while the right false ribs and side are raised by one hand, so as to carry the liver forward. Having examined the state of both hypochondria, and the epigastre, during a full inspiration, as well as during a full expiration; and when the right thigh is bent, as well as when it is extended; we afterwards turn the person gradually over towards the left side, so as to be lying almost on his face, and then press carefully over the region of the liver, desiring the patient at the same time to make a full respiration.

The symptoms already enumerated, are the outline, or general signs of acute disease of the liver. From observing a large number of cases, in the course of several years past, it appears to me that *acute superficial inflammation* at the convex surface (not exclusively peritoneal inflammation), is more frequent during the hot months of April and May than we usually observe at other seasons of the year: the disease is then more commonly ushered in by slight rigor; the enlargement of the liver is less distinct at the commencement of the attack; there is more pyrexia, and more acute pain on a full inspiration, or on compressing the cartilages of the lower ribs with the palm of the hand; cough is also a frequent symptom.

Differing from the above, we have the *inflammatory congestion, with tendency to central abscess*; which is the most prevalent form of acute liver-disease in Bengal. Cases of this sort become more frequent during the rains, (from June to September,) but the greatest proportion happens during the two first months of

the cold season, from 10th November to 10th January. The enlargement of the liver, with tension at the epigastre and hyochondria, are more evident in the early stages of this affection; there is also more oppression at chest with impeded respiration: but there is less of acute pain on taking a full inspiration, and less morbid sensibility on pressing over the liver, than in the acute superficial inflammation. One very common symptom of this tendency to central abscess of the right lobe of the liver, is a much greater degree of *tension of the right rectus abdominis muscle*, than of the left; the muscle on the right side resisting pressure by a quick involuntary action, while the left rectus is lax, and other parts of the patient's belly soft and elastic. I consider this one of the most undeviating symptoms of congestion, with incipient interstitial deposit into the texture of the liver, which commonly goes on to deep-seated abscess; unaccompanied by urgent symptoms of pain, or pyrexia. I have seen the left rectus muscle alone affected in this way, in patients who have afterwards died of abscess in the left lobe only. This symptom is of the more importance, as it takes place at an early period of the disease, when we can almost always effect a cure, by due persistence in a proper system of treatment.

In cases of protracted hepatic congestion, with tendency to the formation of central abscess; especially those which occur at the latter end of the rains, and beginning of the cold season: I have had occasion in the dissection of dead bodies, to observe the cellular structure of the mediastinum affected with some degree of interstitial deposit of an albuminous appearance. The cellular structure at the root of the mesentery and mesocolon, particularly across the upper part of the lumbar vertebræ, is also often in a state of vascular engorgement, with more or less of serous infiltration: oppression at the chest, and tension of the belly, are frequently produced and kept up by these morbid conditions, as well as by the turgescence of the liver. I would wish here to observe, that where there has been distinctly a precedence of Hepatic disease, and Dysenteric symptoms have come on afterwards, when abscess in the liver had formed, the ulcerations of the intestine have been for the most part small, superficial, and circular; though this is not invariably the case.

Another description of liver affection sufficiently distinct from either of the former, is common at all seasons of the year; it is found sometimes to follow Fevers, where the patients have not pursued a system of mild purgatives for a sufficient length of time during convalescence; but in far the greater number of cases we cannot assign any reason for its origin: the patients complain of pain at a circumscribed space about 4 inches above and to the right of the navel, on a line drawn from the umbilicus to the point of the right shoulder; and the disease is attended by the following circumstances. The attack sometimes commences suddenly after eating, and in that case the food is usually vomited, whereby a

transient relief is experienced ; the respite is but short, for the pain soon returns, and pressure over the part cannot be borne ; a full inspiration increases the pain, and the patient is unable to stand erect, or to lie straight in bed ; he rests with the body bent forward, and inclining to the right side ; there is great anxiety, and the nights are passed without sleep, there is usually a sense of weariness and pain in the loins ; tumefaction of the liver is seldom evident. In severe cases the pain shoots back towards the lower angle of the scapula or up towards the shoulder ; and is of the acute kind that is usually spoken of as a stitch or spasm, which prevents coughing or sighing. The bowels are usually costive at first, the urine high-coloured, and jaundice sometimes takes place : there is a dry tongue, thirst, headache, and frequent pulse, but not generally very high fever corresponding with the acute pain. In the latter stages of the disease, a distressing purging of black watery fluid takes place, and sometimes much blood is passed by stool. Severe cases, if not arrested by a very decisive and persevering treatment, will run their course in 20 or 25 days : during the last 6 or 8 days, the profuse discharge from the bowels usually attracts most attention ; and the patient dies from irritative fever, produced by inflammation and congestion, which affect not only the liver, but the capsule of Glisson ; and in some measure extend to the cellular structure round the duodenum, and at the root of the mesentery. It is not common for abscess in the liver to form, after the course of disease above described ; though that is sometimes the case.

A less acute affection of the same parts is very frequently met with ; the pain at the same circumscribed spot above described, less severe and without shooting to the shoulder or scapula, and it is not very distressing even when pressure is made over the part : there is occasionally slight pyrexia ; and almost always a moist, yellowish, loaded tongue. In protracted cases, the tongue sometimes becomes clean and moist ; the urine is often high-coloured for several days at a time, and then resumes its natural colour ; there is occasional nausea, the digestion is much impaired, the face becomes sallow, haggard, thin, and lurid ; the limbs slowly emaciated, the belly tense, and sometimes tumid. The bowels are usually irregular, there being scanty, black, costive evacuations for a day or two ; and then fluid, scanty, unsatisfactory stools, sometimes nearly white, at other times tinged with blood. I have seen cases of this sort, which had existed eight and ten months ; the patients having been repeatedly salivated and blistered, without a persistence in any very rational system of treatment. The disease is liable at any time to take on the acute characters before described, and terminate in abscess of the liver : though in emaciated persons, it more commonly causes jaundice, or dropsy.

The causes of Inflammation and Abscess of the Liver in Bengal, appear to be a humid atmosphere, and high temperature during the day, followed by cold nights : the more superficial acute in-

inflammation certainly occurs most frequently during the dry hot months of April and May ; while we observe the inflammatory congestion, with tendency to central abscess, more commonly taking place towards the latter end of the rains ; and at the beginning of the cold season, when considerable diurnal changes of temperature happen. Europeans recently arrived in Bengal are very liable to liver disease, from slight exposure to atmospheric vicissitudes, or to the common causes which produce fever in Europe.

Habitual plethora, and superabundance of stimulant food, beyond the real wants of the constitution, doubtless keep the greater number of Europeans in India in an almost perpetual state of proclivity to inflammatory and suppurative disease of the liver. This is especially the case in Bengal at the beginning of the cold season, when the profuse action of the skin that had existed for many months becomes restrained ; the predisposition to disease from the past hot season and rains remaining. Hepatic abscess often arises from the combined influence of several of the above causes in Europeans of temperate and reserved habits of living. I do not remember ever having seen an abscess of the liver in a man who was at the time suffering much from numerous painful and inflamed boils.

There seems reason to believe, that the stimulant and opium treatment of delirium tremens often lays the foundation of abscess in the liver : or I would rather express in other words my belief that hepatic abscess would less frequently follow delirium tremens, if that complaint, when combined with febrile and inflammatory symptoms, were more commonly treated by antiphlogistic means.*

The following diseases are liable to be mistaken for affections of the liver, viz., Empyema, or hydrothorax of right side of chest ; disease of the right lung ; ulcers and some chronic disorders of the stomach ; disease of the duodenum, or of the cæcum, and a loaded state of those intestines without actual disease ; a scirrhus pylorus ; indurated pancreas ; induration of the transverse colon, in severe dysentery, with a solitary large sloughing ulcer, and thickening of the coats at that part of the intestine ; adhesion of the omentum majus to the cæcum, or to the brim of the pelvis.

* The following extract from the London Medical and Physical Journal, shows the safety and benefit of antiphlogistic treatment, in the inflammatory and febrile stage of delirium tremens : — In Friedrich's Hospital, Copenhagen, when delirium tremens was treated partially by antiphlogistics, with personal restraint of the patients, in 1820, one out of every four died ; and in 1821, one out of 4 $\frac{2}{3}$; but in 1822, when a more strict antiphlogistic treatment was pursued, under the direction of professor Herboldt, the patients being allowed their liberty, only one died out of 9 $\frac{1}{3}$; in 1823, one out of 12 ; and in 1824, one out of 9 $\frac{2}{3}$. In the same institution, an exciting treatment, (by opium and stimulants, we presume is meant, without distinction of the cases, gave, as its result, in 1817, one death out of every 2 $\frac{3}{4}$ patients ; in 1818, one out of 2 $\frac{1}{4}$; and in 1819, one out of 21 $\frac{1}{2}$." — *Barkhausen on Delirium Tremens.*

In two cases of young women, I saw an affection of the spine, attended with pain at the right side, which had been mistaken for diseased liver, and treated with mercury, to the manifest disadvantage of the patients. A careful consideration of all the symptoms, with the history of the complaint, will enable us to ascertain when liver disease exists: though it is sometimes difficult to point out the precise nature and seat of the disorder.

The object, in the treatment of severe acute cases of Hepatitis, is considerably to diminish the quantity of circulating fluid; and permanently to subdue the action of the heart and arteries; and by abstaining from food, and taking very little drink, at the same time that we use purgatives, to keep the system so empty and low, that absorption shall be performed with activity. This condition is to be maintained by a steady perseverance in purgatives, and repeated vascular depletion, until we have effected the dispersion of the vascular turgescence, and absorption of that interstitial deposit, more or less of which exists in almost all acute inflammations of the liver, very soon after the disease commences. Supposing the patient to be first seen in the morning; an active purgative should be given, and he should be bled from the arm to ℥ss. or ℥i. The bleeding must be repeated every six hours, until the pain in the side and fulness of epigastre are relieved. Three hours after the second bleeding, 20 leeches should be applied to the side, or epigastre, where tumefaction or pain exists. It is very rarely requisite to bleed from the arm oftener in the worst cases than twice or three times on the first day, and once on the second day; after which leeches must be repeated every forenoon, until the pain and fulness of the liver, with other symptoms of hepatic disease, are removed; reducing the number of leeches to 10, or 6, as the patient's strength fails; and as the progressive subsidence of disease may permit. I prefer applying leeches in the forenoon, because faintness is then less likely to take place than towards evening; and because a continued flow of blood in the night is apt not only to alarm the patient and prevent rest, but occasions him to take stimulants.

In all severe acute cases of Hepatitis, the patient's life depends on systematic pursuance of general and local bloodletting; with quiescence, and strict attention to almost entire exclusion of food: even drink should be taken in limited quantity, while we are endeavouring to empty the vascular system. If the above plan be properly followed up, nearly all the active depletion that is requisite may be accomplished in three or four days. After the purgative advised for the morning of the first day, it is proper to give 10 grains of calomel, with six of compound extract of colocynth, and four of extract of hyoscyamus, in pills every night: followed each morning by as much compound powder of jalap, or infusion of senna with salts, as shall produce four free stools in twenty-four hours.

If the patient's strength become much reduced, and still tume-

faction of the liver remain after pyrexia is subdued, a blister of three inches square is to be put on the epigastre, and kept open ; while six or four leeches are to be applied round the edge of the blister daily, so as to maintain such a drain from the capillary vessels as the strength may admit its continuance for several days. After which, ʒss. of camphorated mercurial ointment is to be well rubbed over the right side once a day ; and moderate purging kept up. By these means, we give the patient all the advantage possible from the properties which depletion and mercury possess, of promoting absorption of inflammatory interstitial deposit, and removing congestion in the liver, as well as equalising the state of the circulation in the capillary vessels over every part of the system. It appears that when copious depletion is premised, these effects of mercury are produced to the greatest extent, when its repetition has been carried on so as to produce the commencement of salivation ; and even then, we are often induced by the good mercury has done to try one or two doses more at longer intervals ; or to prolong the favourable action already produced, by giving blue pill instead of the calomel at night.

Blisters, like mercury, are capable of producing infinite injury, if improperly used. The best time to apply a blister, in the treatment of acute disease of the liver, is, when depletion has been pursued till it is ceasing to be of service, and when the pyrexia and excitement of the system, as well as the severity of local disease are subdued. We are then justified in trying the effect of counter-irritation, and a discharge from the surface ; by which we may hope, at this stage of the disease, to accelerate absorption, through the means of an external stimulant : though we fear yet to make much increase in the patient's allowance of food ; lest by filling up the vascular system, we should cause a return of acute symptoms. I know that blisters are sometimes applied in those stages of the disease, when injury may be done, by exciting some acceleration of the pulse and that slight increase of pyrexia, which are to be expected from a blister, in the early stage of almost any acute disease. Its premature application is also liable to be attended with the negative evils of interfering with proper depletoary measures ; and preventing examination of the state of the liver before acute disease is removed.

The active treatment above described is requisite in the acute disease of robust subjects ; where there is a palpable enlargement of the liver, with pyrexia. In very delicate habits, when the patient is seen early, some modification of the remedies may be admissible ; indecisive and unsteady treatment will insure a prolonged disease, hardly less destructive to the delicate than to the robust constitution ; and I hardly know how to advise indecisive measures in any case, until the disease is entirely subdued.

In acute cases that have suffered a considerable time before they come under treatment, we must employ our remedies with great perseverance, as well as precision : and the order in which those

remedies already specified are applied, is by no means unimportant. The attempt to unload the vessels of the liver in a plethoric subject by leeches without previous V.S. is as unreasonable as an attempt to drain a morass at one side, while a large stream is flowing into it on the other. After cutting off part of the supply to the liver, by diminishing the quantity of blood in the system, leeches are of the greatest benefit.

In all cases of liver disease, where we have occasion to use the lancet, I would bleed the patient while in the recumbent position; because I know of no good that follows syncope in such cases: the abrupt changes of the circulation that occur in fainting, and in subsequent recovery from that state, are of no use. In almost every acute case of Hepatitis, the urgent symptoms are mitigated long before the internal disease is subdued. The history of a large proportion of the abscesses of the liver that prove fatal would show us a remission of acute symptoms after a few days of very judicious treatment; which remission occasions a deviation from a proper course, both in diet and medicine: a gradual return of an unfavourable state is the consequence; and a more intractable disease becomes established, although the symptoms are usually slow and less urgent: but the result is the loss of the patient's life. Even where the early treatment of a severe case has been exceedingly deficient, a deceptive cessation of acute symptoms sometimes occurs; this is at the time when inflammation and vascular engorgement have gone on until effusion or interstitial deposit takes place: the morbid tension of the vessels is then much decreased, and an incautious person is led to remit his attention, just at the moment that the utmost vigilance is requisite, and, in fact, when the greatest science and skill can hardly save life.

The acute superficial inflammation of the liver, and the inflammatory congestion with tendency to central abscess, both require nearly the same treatment above described. The latter disease is usually more tardy in receding, and requires to be pursued during its decrease by a more prolonged and undeviating system of depletion, regulated diet, and employment of the less active antiphlogistic measures; followed by a course of resinous purgatives, with blue pill at night, and small doses of Cheltenham or Epsom salts in the mornings.

The inflammatory condition more especially affecting the capsule of Glisson, attended with much hepatic congestion, requires, in its acute forms, all the same science and precision for its removal, which we could wish to see employed in the other acute affections above described. The milder description of the same affection, which is much more commonly met with, is only dangerous when entirely neglected, or treated in an unsteady, unscientific manner. In persons of spare habit we find this slighter degree of disease frequently not demanding bloodletting from the arm: but a daily repetition of leeches is requisite for a long time. The protracted cases, that come for treatment at a late period, require leeches

daily, from two to six weeks; at the same time that mild purgatives are used, and a regulated and very slender diet is allowed. The patient should remain in tranquillity, in the most healthy situation available, during the progress of cure. Some of the slighter cases, doubtless, occasionally admit of spontaneous recovery after a protracted period; but life should never be trusted to this chance.

OBSERVATION I.—James Gray, æt. 30, admitted into Hospital on the evening of the 14th November, 1830. A soldier, eight years in India, of middle size, and light complexion; ill four days with purging and griping; belly generally tense; liver tumid, and painful on pressure. Pulse 98, and full; tongue white; illness ascribed to drinking spirits.

V.S. ad 3xx.—R. Calomel., Extract. Colocynth. Comp. āā ʒss.

November 15th.—Blood not buffy; he had eight stools during the night, which are not kept; says he passed some blood: the tumefaction of liver has not subsided, and he is not relieved in any respect; he has now most pain at the epigastre, his face is flushed, and there is slight morbid heat of skin; pulse 96, and softer.

V.S. ad ʒiiss. at 7 A.M.—R. Calomel., Extract. Colocynth. Comp. āā ʒss. after the bleeding. Apply 16 leeches to the epigastre at noon; and give Pulv. Jalap. Comp. ʒi. at mid-day.

Vesper.—Blood slightly cupped, and buffy; he had eight stools during the day, and is cooler.

R. Calomel., Extract. Colocynth. Comp. āā ʒss. at bed-time.

Nov. 16th.—Had five stools; belly softer; less morbid sensibility on pressure over the liver.

Apply 16 leeches over the liver.—R. Pulv. Jalap. Comp. ʒi. at 7 A.M.; Oleum Ricini ʒi at noon; Extract. Colocynth. Comp.—Extract. Hyoscyami.; Pil. Hydrarg. āā gr. v. in three pills, at bed-time.

Nov. 17th.—Some hardness remains in region of the liver, but there is very little pyrexia; he has been freely purged.

Apply eight leeches to the region of the liver.—R. Extract. Colocynth. Comp. ʒss.; Pil. Hydrarg. gr. v. in the morning.; Ol. Ricini ʒi. at noon.

Nov. 18th.—He has been freely purged, and is much better in every respect.

Apply four leeches to the region of the liver.—R. Extract. Colocynth. Comp.; Pil. Hydrarg. āā gr. v. morning and night.

After this date, he was purged daily with jalap, or colocynth and blue pill. On the 21st November, his belly was soft and flat, no sign of induration of the liver remained; mild purgatives were continued daily, and on the 23d, he was reported convalescent. The only food allowed was tea, and four ounces of bread twice a day until 17th; after that a small quantity of thin sago daily, at 3 P.M., and on the 22d milk diet.

OBS. II.—A small but muscular man, of dark complexion, aged 20, (in India for four years, employed in mercantile

affairs,) applied to me on the 12th June, 1830, in the evening, on account of acute pain in the region of the liver, which affected respiration, and prevented his lying on the left side. There was slight pyrexia; and fulness with tension, at the epigastre, and towards right hypochondre. He ascribed his illness to a bruise on the liver, by a fall 19 days previously, and he had been gradually getting worse for four days. Had followed no treatment, until yesterday, when he applied 30 leeches, and took one dose of salts.

He was bled to oz. 20; and four hours afterwards 20 leeches were applied to the right side. The only food allowed was tea, and two ounces of bread twice a day.

R. Calomel. — Extract. Colocynth. Comp. āā ℥ss. ; Misce, et divide in Pil. x. — Ordered to take three pills at bed-time. Pulv. Jalap. Comp. ℥i. early to-morrow morning.

June 13th. — He was purged freely, and can breathe more easily, but turning on the left side causes some pain in the liver. Blood not kept.

Apply twenty leeches to the right side, at 10 o'clock, A.M. — R. Three pills repeated at bed-time; and Pulv. Jalap. Comp. ℥i. early to-morrow morning.

June 14th. — Purged freely; tumefaction of liver subsided; he is pale, and free from pyrexia; but still has slight pain in the liver on a full inspiration, or on turning to the left side.

Apply four leeches to the region of the liver. — R. Two of the pills ordered on 12, at bed-time; Ol. Ricini. ℥i. early to-morrow. He was now allowed some more bread with his tea; and a small cup of thin sago, at noon.

June 15th. — He is free from pain or pyrexia, and quite pale; there is now slight yellowness of the eyes, not before noticed; urine not much coloured.

Apply four leeches to the region of the liver. — R. Repeat two pills at bed-time; and let him take a small dose of Cheltenham salts, early to-morrow.

June 16th. — Feels well; but is pale, weak, and hungry.

R. Scammon. G. Resin. — Extract. Colocynth. Comp. āā ℥ii. ; Saponis Duri. — Cambogiæ āā ℥i. ; Misce, et divide in pill xx.

He was directed to take one pill every night, and a small dose of Cheltenham salts every morning; observing a restricted diet, and taking gentle exercise.

On the 20th June, he felt a slight return of pain in the region of the liver, which was increased on the 21st, and then he applied again for advice. There was at that time a distinct fulness at the edge of the right false ribs, and morbid sensibility on pressure at that part. Pulse 96, while he was recumbent, and 104, when sitting up; urine pale-coloured, slight thirst; tongue clean and moist. He was very pale, and had by no means recovered from the effects of the active antiphlogistic treatment pursued during the previous week.

He was directed to live on bread and tea. A dozen leeches were applied over the region of the liver daily, on the 21st, 22d, and 23d: eight on the 24th, and as many on the 25th. Ten

grains of calomel, and ten of compound extract of colocynth, were given on the nights of 21st and 22d; followed by a brisk purgative of compound jalap with scammony on the following mornings. After which, he took two of the purgative pills ordered on the 16th June, with six grains of blue pill every night, for a week; and on the mornings some Cheltenham salts. By these means the pain in side and tumefaction of the liver were subdued, and he soon afterwards proceeded to sea; but was repeatedly leeches, and blistered during the voyage: he has since recovered robust health.

The above case is inserted, to show how apt Hepatitis is to relapse, if not carefully treated during convalescence.

OBS. III. — Thomas Chamberlain, ætat. 36. A soldier, ten years in India; a tall and rather stout man, of light complexion. Admitted into General Hospital on the 13th October, 1830. Has been suffering for five days from pain in the right shoulder, to which part a liniment has been rubbed, and he has taken two purges. He is now suffering from pyrexia, a flushed face, and tense full belly; the respiration is quick, and his ailments are believed to have arisen from intemperance and drink.

V.S. ad. ℥iiss.—R. Calomel., Extract. Colocynth. Comp. āā. ℥ss. at 6 A.M.; Pulv. Jalap. Comp. ℥i. at noon.

Four P. M. — He has been freely purged; blood florid, and not buffy; face less flushed; pain in shoulder not easier; the right rectus abdominis muscle is more tense than the left.

Apply sixteen leeches to the belly at 4 P.M.—R. Calomel., Extract. Colocynth. Comp. āā ℥ss.

Oct. 14th. — Seven stools during the night; pain in the shoulder remains, and fulness at the epigastre with tension of right rectus abdominis muscle; edges of the tongue are moist and red, there is some grey mucus on its centre; less pyrexia.

V.S. ad. ℥i.—R. Apply ten leeches to the Epigastre; Oleum. Ricini, ℥i.

Oct. 15th. — Blood buffy, leeches bled profusely; he was purged four times; has less pyrexia, but slight heat of forehead remains; tongue dry and white in centre; he has less pain in the right shoulder.

Sixteen leeches applied over the liver. — Calomel., Extract. Colocynth. Comp. āā ℥ss. at 7 A.M.; Pulv. Jalap. Comp. ℥i. at noon.

Oct. 16th. — He had eight stools; leeches bled well: some morbid heat of forehead remains; no pain in the shoulder; belly not tumid, but the muscles are still tense.

Apply 10 leeches to the region of the liver; Pills repeated as yesterday morning. Castor Oil ℥i. at noon.

After this he had purgatives daily, and was getting better till the 22d; when there was slight indication of increased hepatic congestion, without pyrexia; which was ascribed to his having eaten meat the day before. He was restricted to milk diet.

Six leeches were applied to the belly. — Calomel. gr. v.; Extract. Colocynth. Comp. ℥ss. were given in the morning; and Pulv. Jalap. Comp. ℥i. at noon.

From this time he took purgatives of extract of colocynth and blue pill; or of jalap, daily, and was discharged well on the 1st November, 1830.

OBS. IV. — John Bruce, aged 25. A small man, of light complexion; eight years in India. Admitted into General Hospital, on the evening of the 1st June, 1830; having been ill ten days with pain in the region of the liver. The belly is now full and elastic, right hypochondre tense and painful; the right rectus abdominis muscle is more tense than the left, and reacts strongly if pressed. Pulse 96 and soft: there is slight morbid heat of skin; tongue moist and covered with little white mucus. He complains of diarrhœa.

V.S. ad $\frac{1}{2}$ ii. — R. Calomel., Extract. Colocynth. Comp. ââ gr. x. To be taken in three pills, at bed-time.

June 2d. — Blood buffy and cupped; he has been purged three times; the belly appears less tumid, and he has less pain: there is very little pyrexia; tongue moist, pale, and nearly clean.

V.S. ad $\frac{1}{2}$ ss. — R. Pulv. Jalap. Comp. ʒi. at 6 A.M.; Apply 16 leeches to the region of the liver at noon.

Vesper. — Blood buffy and cupped. No pyrexia; the belly is softer; he has not been freely purged, but has been vomiting; the leech bites are bleeding freely.

Enema Purg. statim. — R. Calomel. ʒi. ; Extract. Colocynth. Comp. gr. vi. misce, fiant Pil. iii. — Three pills to be taken at bed-time.

June 3d. — The leech-bites are still bleeding; he had four stools during the night, and slept at intervals. There is slight pyrexia; pulse 102, and soft; tongue loaded, white, and moist. He appears considerably reduced by the treatment.

Apply six leeches to the epigastre — R. Extract Colocynth. Comp.; Pil. Hydrarg. ââ ʒss. in pills, at 6 A.M.; Olei. Ricini, ʒi. at noon.

Vesper. — Had three scanty stools, of dark colour; there is no pyrexia at present, and he says no pain in the side.

R. Extract Colocynth. Comp.; Pil. Hydrarg. ââ ʒss. in three pills, at bed-time.

June 4th. — No stool during the night; there is at present some pyrexia; muscles of belly still tense.

Apply 16 leeches to the belly. — R. Calomel.; Extract. Colocynth. Comp. ââ ʒss. in three pills, at 6 A.M.; Pulv. Jalap. Com. ʒi. at noon.

June 5th. — He has been purged six times; some enlargement of liver still remains, but there is no pyrexia.

Apply 10 leeches to the region of the liver. Repeat medicine as yesterday.

Vesper. — Leeches bled freely; he has not been sufficiently purged this day.

R. Olei. Ricini ʒi. statim.

June 6th. — Purged three times during the night; mouth sore; pulse 90; liver decreased in size.

R. Pulv. Jalap. Comp. ʒi. ; Pulv. Scammon. Comp. (Ph. Ed.) ʒi. ; Aquæ Font. ʒi. misce, statim sumend.; Olei. Ricini, ʒi. at noon.

June 7th. — Evacuations from the bowels still scanty; there is

no pyrexia; he has become very pale; the enlargement of the liver is not yet entirely removed.

Apply four leeches to the right side. — R. Extract. Colocynth. Comp. ℥ss.; Pil. Hydrarg. gr. v. in three pills at 6 A.M. — R. Pulv. Jalap. Comp. ℥i.; Pulv. Scammon. Comp. ℥i.; Aq. Font. ℥iss. misce, to be taken at noon; Ol. Ricini, ℥i. at 4 P.M.

June 8th. — He has had four stools; mouth sorer; there is less induration of the liver.

R. Infus. Sennæ Comp. ℥ii.; Magnesia Sulphatis, Sodæ Sulphatis āā ℥ii. misce. To be taken at 6 A.M. — and repeated at noon.

June 9th. — He has been purged five times. No other change. Medicine repeated as yesterday. Apply a blister over the region of the liver.

June 10th. — No alteration in the symptoms. Ordered to take daily

Pulv. Jalap. Comp. ℥i. in the morning; and every night the two following pills.
R. Scammon. Gummi-resin; Extract. Colocynth. Comp. āā gr. iv.; Saponis Duri.; Cambogiæ āā gr. ii.; misce, et divide in Pil. ii.

June 18th. — He had four or five stools daily from these medicines, and was improving until this date; when some tension of the right rectus muscle was again observed, but pressure gave no pain, and he had no pyrexia.

Eight leeches were applied over the liver; he had Pulv. Jalap. Comp. ℥i. in the morning; Olei. Ricini ℥i. at noon. — R. Extract. Colocynth. Comp.; Pil. Hydrarg. āā gr. viii.; Extract. Hyoseyami gr. iv. in Pills, at bed-time.

June 19th. — He has been purged five times, and there is less tension of the right rectus muscle.

Apply four leeches to the belly; Pulv. Jalap. Comp. ℥i. to be taken at 6 A.M. Night pills repeated as ordered on 18th.

After this his bowels were kept free, and he was discharged well on the 5th July, 1830. He remained in good health, and followed a very active occupation.

The diet was restricted to tea and bread, until the 17th June: after that sago was also allowed: and from the 20th June, he had bread and milk.

OBS. V. Henry Weager, aged 55. A stout man, of light complexion, 39 years in India, of active habits and temperate. Was admitted into General Hospital on the 11th July, 1827, at 1 P. M. He had been suffering for 10 days with pain in the region of the liver. His illness was slight at first, but the pain has increased much this day, and is attended with pyrexia. Pulse 98, and full; pressure over the liver causes extreme pain.

V.S. ad ℥xxxiv. — R. Pulv. Jalap. Comp. ℥i.

5 P.M. — The blood is buffy, and much cupped; he has been purged twice, and the pyrexia is somewhat increased, but the pain in the liver is unabated. Tongue loaded with grey mucus.

Apply 12 leeches to the region of the liver; Ordered to take Calomel, Extract Colocynth. Comp. āā ℥ss. in Pills.

July 12th. — He has been purged, and is easier; pyrexia somewhat moderated, but pressure over the liver causes acute pain.

V.S. ad $\mathfrak{h}\mathfrak{i}$.; Apply 16 leeches to the right side, in four hours. — R. Calomel $\mathfrak{D}\mathfrak{s}\mathfrak{s}$.; Extract Colocynth. Comp. gr. v. in Pills, at 6 A.M., and repeat at noon.

July 13th. — He has had only three scanty watery stools, and feels better, but still suffers from pain in the region of the liver.

Apply 16 leeches over the region of the liver. — R. Calomel $\mathfrak{D}\mathfrak{s}\mathfrak{s}$. in pills, at 6 A.M.; Ol. Ricini $\mathfrak{Z}\mathfrak{vi}$. at noon.

Vesper. — He has been purged twice, and the pain is decreased. Tongue cleaner.

R. Calomel; Extract Colocynth. Comp. $\mathfrak{a}\mathfrak{a}$ gr. v.

July 14th. — He had two feculent bronze-coloured stools during the night; is free from pyrexia, and has less pain in the liver.

Apply six leeches to the Epigastre, and repeat the Pills morning and night, as yesterday.

July 15th. — He has had three stools; mouth sore; he complains of debility, and has some pain in the region of the liver, unattended with pyrexia. Pulse 76, and soft.

Six leeches were applied to the Epigastre, and he took Calomel; Extract. Colocynth. Comp. $\mathfrak{a}\mathfrak{a}$ gr. v. at 6 A.M.

July 16th. — He is better.

Six leeches were applied to the right hypochondrium, and he had Pulv. Jalap. Comp. $\mathfrak{Z}\mathfrak{s}\mathfrak{s}$. at 6 A.M.

July 17th. — He was purged twice, and is now nearly free from pain. Treatment of yesterday repeated.

July 18th. — There is no change since yesterday. He took an ounce of castor oil, and a blister was applied over the region of the liver.

July 19th. — He was freely purged, mouth sorer, and he has very little pain in the side.

R. Pulv. Jalap. Comp. $\mathfrak{Z}\mathfrak{s}\mathfrak{s}$. at 6 A.M.

July 20th. — He is free from pain and feels better. The jalap was repeated.

July 24th. — He remains without pain, and is well but weak.

R. Decoct. Cinchonæ $\mathfrak{h}\mathfrak{i}$.; Sodæ Sulphat. $\mathfrak{Z}\mathfrak{i}$. misce — ordered to take 2 oz. daily.

This patient remained several months in Bengal, quite free from any affection of the liver; and then embarked for Europe. He returned to Bengal in 1830, suffering from a large cancer of the left side of the face and orbit, of which he died on the 20th April, 1831; and I had an opportunity of inspecting the body, nearly four years after the severe attack of hepatic disease. The liver was found of rather a darker colour than natural, somewhat softened in its texture, and the section bled freely. The whole convex surface of its right lobe was adherent to the diaphragm, and the edge of the right, as well as a part of the left lobe was adherent to the transverse portion of the colon. The gall-bladder was enlarged, and contained bile of a deep yellow colour; the ducts were pervious. A false membrane, (the result of inflammation at a remote period,) covered the whole of the gall-bladder and capsule of Glisson, con-

necting them with the adjacent parts. The spleen was slightly enlarged, of reddish-grey colour, and somewhat indurated.

OBS. VI. — A small but muscular man, of dark complexion, aged 24, who had been two years and a half in India, (during which he enjoyed good health, and followed active occupations in a mercantile house,) had, without evident cause, except constipation, an attack of fever on the 4th November, 1827; the prominent symptoms of which were headache, great anxiety, and the tongue exceedingly loaded with grey mucus. He was bled largely from the arm once, and leeches were repeatedly applied to the temples and nucha. Ten grains of calomel, with as much compound extract of colocynth, was taken every night, and infusion of senna with salts repeated every three hours in the forenoon, to produce free purging. This treatment was pursued for four days, and the pyrexia gradually subsided; but a great degree of languor and anxiety remained, with a moist white tongue.

Six grains of blue pill, and as much extract of colocynth, were now given every night; and a dose of Epsom salts in the mornings. The diet being restricted to tea, bread, and sago. At the end of a week, he was much better; the tongue was cleaner, and his appetite had returned, but he complained of extreme languor, anxiety, and restless nights; and had become exceedingly pale. For the purpose of avoiding inducements to attend to business, he was removed to a friend's house on the 15th November; directed to continue his medicines, and permitted to take more food, but no wine.

November 22d. — I was again sent for, on account of slight pain at the centre of left collar-bone and a swelling at the pit of the stomach. The patient had a tolerable appetite, and was free from fever; but still very pale, and weak. He had taken only a very small quantity of meat, and no wine, since I last saw him; and had kept his bowels very free. On examination, I found the left lobe of the liver enlarged and painful on pressure: the swelling occupied the epigastre, extending towards the left, it was very prominent anteriorly, and must have extended through the whole left lobe of the liver, as it received a strong impulse from the action of the heart; which was in fact the principal cause of my being again consulted, for there was no great pain when the swelling was not pressed. I was truly shocked on observing the extent and prominence of this tumour, which had arisen in the course of a few days, and though not previously evident externally, I had no doubt must have commenced insidiously during the fever, if not previously. The cause of tardy convalescence was now but too evident.

The patient was told that, notwithstanding his paleness and sensations of debility, his system would still bear active treatment; and that his only hope of recovery depended on most rigid adherence to such plan of depletion, and absence of food, as should leave the vascular system very empty, and excite the highest degree of

avidity of the absorbents, to remove the enlargement of the liver. He was directed to remain on his couch, observing the utmost quiescence, avoiding conversation, or anything that might in the slightest degree quicken the pulse. When requiring to go to the stool, which was placed near his couch, he was to be raised by a servant. Ten leeches were applied to the liver daily, and the bleeding allowed to continue. Twelve grains of calomel, with 8 of compound extract of colocynth, were ordered every night: one drachm of compound powder of jalap every morning: and if not freely purged four times by 2 P.M. a dose of compound infusion of senna with salts was taken. He was allowed a cup of tea night and morning, but no food, and no drink in large quantity; only a table-spoonful of water every half hour, if thirsty.

This plan was followed daily till the 29th November, without the slightest effect on the tumefaction of the liver. Debility and paleness were extreme, and I doubt if he would have survived another application of leeches. A blister was now applied over the epigastre, and kept open with savine cerate. The former medicines were continued daily. Leeches omitted; and he was allowed 2 oz. of bread with his tea, night and morning.

December 3d. — Strength somewhat improved, and there is more firmness of pulse; tumour unchanged in appearance. The blister was ordered to be kept discharging, by the savine dressing; four leeches were applied to the blistered surface daily, just over the most prominent part of the tumour; medicine and diet not altered.

Dec. 6th. — Has four free stools daily, and there is a decided decrease in the size of the tumefaction of liver; the pain at centre of left clavicle has ceased; he feels weaker since resuming the use of the leeches. Mouth not affected by the large and repeated doses of calomel which he has taken. Former medicines continued daily, as well as the leeches: and he is directed to rub ʒi. of camphorated mercurial ointment over the right side of the chest and belly, round the blistered part. With a view of affording more nourishment, without producing redundancy of fluids or much excitement in the system, a boiled egg, and some salt was allowed once a day, without any increase in quantity of bread.

Dec. 11th. — Tumour much decreased, and the patient is not weaker. Mouth not affected. Ointment continued daily, leeches and former medicine omitted. Quantity of bread increased, and a tea-cupful of soup allowed.

He was directed to take a tea-spoonful of Cheltenham salts, in half a tumbler of water, every morning

R. Scammon. Gummi-resinæ, Ext. Colocynth. Comp. āā ʒi.; Saponis. Duri, Cambogiæ, āā ʒss. — misce, et divide in Pil. No. xxx. Capt. ii. omni nocte.

The fulness at epigastre and towards the left side slowly decreased. The camphorated ointment was omitted on the 19th December; but the above pills and salts were continued daily for six weeks longer.

This patient recovered perfect health, and is still in Bengal pursuing active occupations. I have never seen a case that appeared to be so far advanced as this which ultimately recovered. The youth of the patient, and his firm and resolute mind to undergo the extreme depletion, enabled me to save his life. When I first saw the tumefaction at epigastre, and towards the left lobe of the liver, I did not think myself justified in giving his friends any hope that an abscess of the liver could be prevented. It is remarkable that all the mercury taken caused no sign of salivation. This gentleman had occasion to take a few alterative doses of calomel, about three years after this illness; and his mouth became affected by taking two grains every night, for eight doses, although he took some saline purgative every morning.

An insidious attack of liver disease very often shows itself at the conclusion of fevers in Bengal; in the same manner as occurred in the above case, and an abscess is impending before the attention is called to the part principally affected by urgent and unequivocal symptoms. We should therefore never rest satisfied, until we have ascertained the cause of imperfect convalescence after fevers; more especially when it is attended with anxiety, a white tongue, and languor.

OBS. VII. — A middle sized man, 51 years of age, of dark complexion, and rather lax fibre; had been 26 years in India, and during that period enjoyed almost uninterrupted good health, attending diligently his business, in an office. He met with severe domestic calamities in 1830, subsequently to which his appetite became somewhat impaired, and bowels slow; but he did not relinquish business, or follow any medical treatment.

On the 2d December, 1830, he felt sick soon after breakfast, and vomited. At the same time he was seized with a severe pain at the epigastre, and on that account he took without advice laudanum $\frac{zss.}{}$ with twice as much aromatic spirit of ammonia in tepid water, and had his belly fomented. I saw him in about two hours after the vomiting, and found him languid and weak; there was much elastic tension at the epigastre, extending generally over the belly; and he was suffering from anxiety. The pulse was 92, and rather full; tongue moist, and but little loaded with white mucus.

On account of this patient's long residence in India, and recent afflictions, which had somewhat preyed on his health, I was anxious if possible to avoid a debilitating plan of treatment; therefore ordered a purgative enema to be given, and repeated in an hour. He took 15 grains of calomel, with seven of compound extract of colocynth, and six hours afterwards a dose of infusion of senna and salts. These medicines procured four scanty stools, of a dark brown colour; and the pills were repeated at bed-time.

On the 3d December he took two ounces of castor oil, which produced two stools; one was copious and of dark grey colour, the other scanty: before 10 o'clock in the forenoon he was freely salivated. There was still a considerable degree of general uneasiness of the

belly, with some elastic flatulent distention; pressure between the umbilicus and right false ribs caused pain, that extended towards the right kidney. The pulse was 106, and attended with some morbid heat of skin. He was ordered to take

R. Extract. Colocynth. Comp. — Scammon. Gummi-resinæ āā gr. iv.; Cambogiæ gr. ii. in two Pills, at bed-time.

Dec. 4th. — He passed a restless night, and had two free stools; there is increasing uneasiness in the belly, and rather more pain on pressure. The heat of skin is augmented, and pulse now 106; he complains much of nausea, and there is a distinct fulness in the region of the liver.

V.S. ad $\frac{1}{2}$ ii. He took Pulv. Jalap. Comp. $\frac{3}{4}$ i. at 7 A.M., and Castor Oil $\frac{3}{4}$ i. at noon.

At 4 P.M. — The blood taken in the morning was buffy, and he had two copious dark-brown stools. He was rather cooler; the pulse 94 and softer. The enlargement of the liver and morbid sensibility on pressure unabated.

Twenty leeches were applied over the liver; pills repeated at bed-time, as last night.

Dec. 5th. — He was freely purged in the night, and had some sleep at intervals; is now free from pyrexia, and there is less anxiety; a deep-seated pain remains under the three last right false ribs, much increased by pressure.

Sixteen leeches were ordered to be applied to the region of the liver; and he took a strong dose of Infusion of Senna with Salts. The Pills were repeated at bed-time, as on the 3d.

Dec. 6th. — He is free from pyrexia, and thinks he is better; but some pain remains in the region of the liver, when he stoops or leans forward; and slight enlargement of the liver can still be felt, but the belly is soft and flat; he perspires; the mouth is sore, and he has a frequent hiccup.

Apply a blister over the region of the liver.—R. Extract. Colocynth. Comp.; Scammon. Gummi-resin. āā gr. vi.; Cambogiæ, gr. ii.; Misce, fiant Pil. ii. — to be repeated every night.—R. Pulv. Jalap. Comp. $\frac{3}{4}$ ss. every morning.

Dec. 9th. — Freely purged, and he has no complaint except debility.

He was directed to take two pills, as prescribed on the 6th, every 2d night, for a week: he had no relapse.

This case, as well as Weager's, at page 253, shows how very requisite it is to use decisive measures when liver disease appears, even in aged persons who are long resident in India. I am inclined to say, that instead of trusting to leeches, in the Hepatitis of persons who have been several years in India, we had better first use the lancet freely, once or twice; for we very seldom see these patients satisfactorily recovered from acute liver disease without bleeding from the arm. If the great extent of general bloodletting sometimes necessary in the Hepatitis of younger subjects, be not requisite in such aged persons, by reason of the changes produced

slowly by an Indian climate on their constitutions, a much longer perseverance in low diet, and warm resinous purgatives, with blue pill, must be advised, to restore a healthy state, when the liver has gradually become diseased. Observations XV. and XVI. prove how important it is both for the old resident, and for those recently arrived, to adopt a proper system of treatment early, whenever the liver is inflamed: and to take advantage of every accessory aid afforded by spare diet, quiescence, and domestic management, as long as any symptom of Hepatitis remains. I have no doubt that both those cases above alluded to might have been cured by perseverance in a reasonable course of active treatment at an early stage of the disease.

That diseases of equal severity with the foregoing are very common in Bengal, may be proved by the fact, that four such severe cases as Green, Bruce, King, and Craggs, which are detailed in this paper, besides several with slighter affections, were admitted into one division of the Hospital in less than a month. And the proclivity to severe hepatic diseases, in this part of India, will be evident, when I state that of the seven cases above detailed, four were in persons of temperate habits, and possessing ample means of obtaining all requisite comforts in living. Two of them were old residents in India; and several of the cases in this paper will show that those who have lived long in the country are not exempt from such severe hepatic disease as is apt to terminate in abscess.

In the foregoing examples, we have distinct evidence that the liver was inflamed; and in many of the cases there was a great degree of enlargement of that organ. The symptoms were distinct, and in some of the patients the liver disease was certainly very far advanced towards suppuration, before they applied for medical treatment. Pain is not generally very severe in the Hepatitis of Bengal: and the central abscess is often actually formed before this symptom is so troublesome as to excite alarm of the patient. In some cases pain is hardly acknowledged till the abscess has made its way to the membranes covering the surface of the liver; and these insidious cases of Hepatitis are much more to be dreaded than those which commence with distressing symptoms. When severe acute Hepatitis exists, the disease is only to be cured by the most scientific and persevering treatment; aided by resolute submission on the part of the patient. Milder attacks of the disease than those above detailed, may sometimes admit of cure by less active treatment; but slight cases, as well as the more severe affections, certainly ought to be carefully watched for a long period during convalescence; as there can be no doubt, that the more urgent symptoms may subside long before the disease itself is completely removed. When the attack is sudden, and accompanied by severe acute symptoms, the utmost promptitude is requisite to meet the disease by corresponding remedies. But in ordinary cases, with less urgent symptoms, it is much better to clear out the

bowels, and leave the patient a few hours without food, except tea and a cup of gruel; that we may carefully examine the state of the liver when the intestines are empty, so as to ascertain as accurately as possible the nature and degree of the existing disease, and decide on the treatment requisite. The evils arising from a little delay in commencing the more active system of treatment, are of infinitely less importance than those which depend on the premature cessation of appropriate remedies. I am quite certain that a large number of cases may be cured, after much serous effusion has taken place into the structure of the liver; and we shall find no difficulty in acknowledging the degree of perseverance requisite, in conducting the latter stages of the treatment of such cases, if we advert to the ecchymosed state observed in some of the post-mortem examinations recorded in this paper; and the circumscribed softening of the texture in some parts of the liver in others.

ABSCESS OF THE LIVER.

Rigor is by no means a general attendant on the formation of abscess in the liver; in the majority of cases which I have seen it did not occur. But I believe tumefaction, fulness, and morbid tension at the epigastre, or hypochondre, may be always detected long before an abscess has formed. When an extensive collection of matter takes place, the pulse almost always rises above 100; and distressing dysentery is frequently present. If the abscess be situated near the stomach, vomiting often occurs. Many patients, having extensive suppuration in the liver, die before the abscess bursts.

The distinct and prominent intumescence, which occasionally exists, and after a time subsides, leaves us reason to believe that very advanced stages of hepatic abscess, in persons of sound constitution, are sometimes cured by absorption. This opinion is farther confirmed by the marks like cicatrices which we see occasionally on the surface of the liver, in such unquestionable shape that we cannot help believing that small abscesses very near the surface of the liver are frequently absorbed: the collapse and cohesion of the sides of their cavities forming these marks. Equally unequivocal appearances of condensed fibrous structure are occasionally met with, more deeply in the substance of the liver; and in those cases where reference to the successful treatment employed during former attacks of acute disease is accessible, we find that a *steady, active, and prolonged antiphlogistic treatment* had been followed. I fear that patients in the advanced stage of severe acute disease of the liver are sometimes lost, because we hope we have done enough when the symptoms first subside; but treatment ought to be persisted in much longer. When patients apply for advice too late, or when from any other causes the treatment fails to subdue the inflammation, and suppuration has taken place, we

sometimes see persons survive that dangerous crisis, and the contents of the abscess are evacuated: a few of these patients may still recover under a careful and discriminating treatment.

OBS. VIII. — Mr. J. M., aged 42, a strong man, of light complexion, but now somewhat emaciated, (who had resided eight years in various parts of India,) came under my care on the 19th October, 1830. He stated, that his bowels had been disordered ever since the beginning of the month, with frequent calls to stool: the evacuations scanty, and though loose, voided with some difficulty, as if more fæces remained: they were sometimes dark, and at other times of a rhubarb colour. For the five days before he sent for me the stools had been gradually becoming more frequent, and attended with tenesmus: and he was so much distressed by frequent calls to stool, on the previous evening, that he took 30 drops of laudanum without advice; but had passed a miserable night, rising above 30 times to stool, and voiding scanty, reddish, orange-coloured evacuations, mixed with slime. He had a flushed face, and hot dry skin. Pulse 102, and full, the tongue much loaded with moist grey mucus. The belly was rather retracted, whereby an enlargement of the liver was easily perceptible, and pressure at that part gave pain; but there was some morbid sensibility on pressing over any part of the abdomen.

I saw him first at 8 A.M. and took ℥iiss. of blood from the arm, immediately, and prescribed

R. Calomel., Extract. Colocynth. Comp. āā ℥ss. in Pills, followed in 4 hours by Pulv. Jalap. Comp. ℥i.

On visiting at 4 P.M. the pyrexia was very little abated, the urgent calls to stool nothing easier: the blood exceedingly buffy and cupped.

V.S. repeated to ℥i. Twenty leeches were applied over the tumour of the liver, and the Calomel and Colocynth Pills repeated.

October 20th. — Very little easier, enlargement of the liver not abated, evacuations more copious, but of reddish colour, like a paste of flour and water tinged with rhubarb; pulse still 102, but much subdued in force; skin dry and hot; tongue loaded with grey mucus: he feels much exhausted.

Apply thirty leeches over the tumour of the liver. — R. Infus. Sennæ Comp. ℥ii.; Magnesia Sulphatis., Sodæ Sulphatis āā ℥ii.; misce, — to be taken at 6 A.M. and repeated at noon.

Vesper. — Less pain, and he goes less frequently to stool: evacuations still scanty, and of the same colour, mixed with some mucus. Enlargement of liver not reduced; pulse 104, and rather more full; he feels very weak; skin hot, but perspiring; mouth sore.

Apply twelve leeches to the liver. — R. Extract. Colocynth. Comp. ℥ss. — Pil. Hydrarg. gr. v. In three pills at bed-time.

Oct. 21st. — Many ineffectual calls to stool during the night, and there is extreme anxiety; he feels exceedingly weak, and is

perspiring, but the skin remains hot; pulse 106, his firmness of mind begins to fail, and he is with difficulty persuaded to go on with medicine.

R. Extract. Colocynth. Comp. ℥ss.; Pil. Hydrarg. gr. v. — in three pills, at 6 A. M. and repeat at night.

Oct. 22d. — Stools more copious since midnight, and contain above a pint of pus, mixed with some florid blood; swelling of right hypochondre decreased. He is much lower, and weaker, and cannot rise to stool; pulse soft and feeble. Morbid heat of skin subsided in great measure, there is a circumscribed hectic flush of cheeks.

R. Pil. Hydrarg. — Pulv. Ipecacuanhæ. Extract. Gentian., Extract. Colocynth. Comp. āā gr. iii. misce, et divide in Pil. ii. — Capt. hujusmodi Pil. ii. sexta quaque hora.

Oct. 23d. — The first stool after daylight this morning contained above 6 oz. of white, thick, slimy pus; he had not above ten evacuations during day and night, of the same reddish colour, very little tinged with blood: some pus is seen in almost every stool. The whole of the matter voided during the last 24 hours is computed at 17 ounces, there is less heat of skin, and his thirst is abated; he is weak, fretful, and desponding.

Pills repeated every six hours as yesterday.

Oct. 24th. — Liver softer and less tumid, otherwise not much change since yesterday; the pills produced nausea, and he does not appear to have derived much benefit from them: he voided about eight ounces of pus, little tinged with blood, in the last 24 hours. Has still a hectic flush in the cheeks. Medicine omitted.

Oct. 26th. — Tongue cleaner, and tumefaction of the liver hardly perceptible; countenance sunk, and there is a light flush in the cheeks. Pulse 86, and soft, he perspires very freely. Had five stools in last 24 hours, and passed only one and a half ounce of grey feculence, and not less than ten ounces of pus, in two of the stools; it was much tinged with blood. He has only taken tea, thin gruel, and toast-water, up to this day; but now feels hungry, and desires to eat bread and milk, which is permitted.

R. Infus. Gentian. Comp., Infus. Sennæ Comp. āā ℥ii.; Magnesiæ Sulph. ℥vi., Acid. Sulph. Aromat. gtt. xx.; Quininæ Sulphatis gr. iv. misce, — half to be taken at 6 A. M., the rest to-morrow.

Oct. 28th. — He is much better, but very weak, and still has a slight flush of the cheek; had six stools of dark grey colour, and has passed some pus with almost every stool.

Medicine continued daily as above.

Nov. 8th. — Discharge of pus ceased yesterday; he has had four rather scanty stools of dark-brown colour, and the consistence of paste.

To take two oz. of mixture as above, every morning. — R. Pil. Hydrarg., Extract. Colocynth. Comp. āā gr. v. every night at bed-time.

This medicine was continued for a week. The patient gradually recovered, and remains well.

OBS. IX.—John Goddard, a delicate and pale lad, of light complexion, aged 18; arrived from England in 1827. He had occasionally voided portions of tape-worm with his stools for above a year. About the middle of September he first experienced pain at the upper part of his belly, which was ascribed to his old complaint, and he took a strong dose of calomel and jalap, which he stated had the effect of expelling a large quantity of the tape-worm in separate pieces. A second dose of the same sort, and then a dose of oil of turpentine were afterwards taken, but no more of the worm observed. After this his bowels became very costive, and he experienced a dull heavy pain at the right side, which he supposed depended either on some remains of the worms, or on constipation; therefore he was satisfied with taking such aperient medicines as served to affect the bowels: and he remained without any proper treatment for the affection of the liver until the 21st October, 1827, when I was requested to see him. He was then pale, weak, and emaciated, prone to constipation, and subject to occasional cold perspirations: the tongue white and moist; pulse 88, and soft. On examination, the liver was found much enlarged, pressure over the right hypochondre caused pain; and he complained of rheumatism in the right shoulder: according to his account, this was at least 22 days from the time he first noticed pain in the right side.

Sixteen leeches were ordered over the region of the liver every morning. Pulv. Jalap. Comp. \mathfrak{z} i. to be taken at daylight. Extract. Colocynth. Comp. gr. v.; Calomel. \mathfrak{D} ss.; Extract. Hyoscyami gr. iv. in Pills every night.

On the 24th October he was made very faint by the leeches, therefore only 10 were applied daily afterwards; and the former medicine was continued: by which five or six free stools were produced daily.

Oct. 27th.—Mouth sore, but no material amendment in his condition; and he did not appear much weakened by the treatment, which was continued; but only six leeches applied to the epigastre daily.

Oct. 29th.—Œdema of the feet and scrotum; pulse 108, soft and weak; enlargement of the liver more prominent at the epigastre, and the cartilages of right false ribs are less raised up. A blister was applied to the epigastre, and kept open. His former medicine omitted, and he took Pulv. Rhei., Sal. Polychrest, $\mathfrak{a}\mathfrak{a}$ \mathfrak{D} ss. every morning. Diet had been previously restricted to tea, bread, and sago; but he was now directed to take a tea-cupful of milk, boiled and thickened with a little flour, night and morning; and half a pint of soup at noon; and he was desired to remain very quiet. It was evident that a large abscess had formed in the liver, and his case was viewed with despair. His bowels were moved always once freely, and two or three times more scantily, every day by the medicine.

Nov. 14th.—He remained with very little alteration till this morning, when he awoke with a sense of great faintness and nausea; attended with thirst, flushed face, sense of flatulent distention of the belly, and frequent desire to go to stool: but he passed only a little reddish slime, until half-past 10 o'clock, A.M. when he had a free evacuation, which was found to consist of blood and pus, the whole supposed to be near *th*iss. After this he was very faint all day; and had slight palpitation at the heart, and perspired much. Tumour at the epigastre considerably subsided. The blister was allowed to heal; the powders of Rhubarb and Salpolychrest were omitted, and he was ordered to take

Extract. Colocynth. Comp., Extract. Hyoscyami, Pil. Hydrarg. ãã gr. iv. every night at bed-time.

Nov. 18th.—He is very pale and weak, there is rather more tension at epigastre than usual, with flatulence and nausea; the quantity of pus in the evacuations did not exceed five ounces yesterday: and this morning there is only a scanty, loose, grey evacuation, with a little slime.

Vesper.—Copious evacuations of pus, tinged with blood since noon, and diminished tension at the epigastre; he seems much weaker. Pills continued every night.

R. Pulv. Rhei., Pulv. Columbo, ãã ʒss . in Aq. Cinnamon ʒi . every morning.

Nov. 27th.—Œdema of the feet and scrotum subsided, and health improved; the quantity of pus in the stools gradually decreased, and for the last two days ceased altogether. He is pale and weak; but not very much emaciated. There is still some hardness at epigastre, and towards the right side, but no prominent swelling, as there was before the abscess burst: pressure over the part hardly causes any uneasiness; mind tranquil, and appetite tolerable; he has always had two or three stools daily. Medicines continued.

Nov. 30th.—Health slowly improving. Embarked for Europe this day.

The proportion of patients who recover, after the formation of an extensive abscess of the liver, in Bengal, is lamentably small. I have as yet seen only one case in which abscess of the liver was opened by an incision. In that case the opening was made near the epigastre; the patient recovered, and lived by no means a temperate life afterwards. On his death, which occurred many years after, from causes unconnected with liver affection, I opened the body, and found adhesions of the convex surface of the liver anteriorly, and an extensive thick fibrous structure, occupying a space at that part, of about three inches in extent, and nearly half an inch thick. The liver rather small, of lurid brownish-red colour, slightly mottled internally; the gall-bladder small, and covered with a dense false membrane.

Though we have unfortunately too many examples of hepatic abscess in Europeans going on to a fatal termination, the ordinary

course of private practice can rarely afford occasion to observe the morbid changes which take place at the incipient stages of the disease. But the practice of a large Hospital, in the course of many years, shows instances of patients dying from fever and dysentery, or from wounds and accidents, during the progress of incipient liver diseases; such as we have reason to believe often lead to the formation of extensive abscess. Observations of the morbid conditions which exist in the liver at the early period of its most important acute diseases, cannot fail to impress us with the impossibility of curing the Hepatitis in two or three days; and will at once show the hazard of omitting to pursue a careful treatment, and to enjoin proper diet and domestic care, for a sufficient period, to give reasonable prospect of restoration to health in all those cases where we are certain Hepatitis has existed. Being satisfied of the accuracy of our diagnosis in the first instance, it will need little argument to convince any practical man, that the severer symptoms of hepatic diseases may be moderated, long before the internal parts are restored to a healthy condition. A memorandum of the following case may be worthy of notice, as an instance of the early stage of that condition which terminates in abscess.

OBS. X. — W. Green, æt. 38, of dark complexion, a tall and large sailor, of the ship *Moir*, recently arrived from England; was sent to Hospital on the 30th May, 1830, in the evening. He had been laboring under Dysentery of the severest description for 14 days. The belly flat, inelastic, and tender if pressed; the patient much reduced, and pyrexia moderate. Pulse varying daily from 96 to 116. He died in 52 hours after admission.

On Dissection — The liver was found slightly enlarged, of rather pale colour, its texture soft and unctuous. An ash-coloured tumour, half the size of a walnut, was observed imbedded in the substance of the liver, near the ligamentum latum hepatis: on cutting across this tumour, a teaspoonful of very thin subalbid fluid was found in its centre; and the sides of the cavity in which the matter was contained, were of a pale grey colour, and much softened to the extent of half an inch. Colon thickened, somewhat contracted, and its interior covered with numerous large grey ulcers, with elevated rough surfaces.

OBS. XI. — Charles Ambrose Craggs, æt. 17, a sailor, of the ship *Sir Thomas Munro*, a delicate lad, of light complexion, one month arrived from England: has lived on board ship. Had been ill 14 days, with a very distressing purging, before he was sent to Hospital; and had taken no medicine, although he had as many as 20 stools per day, mixed with blood. He was admitted into the General Hospital on the evening of 24th June, 1830; complaining solely of the dysenteric symptoms: but on examination, a slight degree of fulness across the epigastre was evident, sufficient to afford room for the greatest apprehension of advanced hepatic disease; there was very little pyrexia, pulse above 100. He was bled to ½ss. and 16 leeches were applied to the scrob. cordis the same

night: ten grains of calomel with four of compound extract of colocynth, and as much extract of hyoscyamus were given at bed-time, and an ounce of castor oil next morning.

June 25th. — Blood taken last evening florid and not buffy, he was almost all night on the close stool; the evacuations about $2\frac{1}{2}$ pints of a dark-green fluid; pulse 102; tongue rather dry and little furred; muscles of belly tense. Sixteen leeches were applied, and as many the next day, which caused him to be very low and faint, and he was covered with a profuse cold perspiration. A blister was now applied to the liver, and a smaller number of leeches round it. The enlargement of the liver appeared reduced by these means, the tumefaction varying a little from day to day, sometimes hardly perceptible, but the muscles of belly remained tense. He became weak, languid, fretful and desponding; the stools frequent and watery, sometimes tinged with blood often nearly black. He sunk and died on the 13th July.

On post-mortem inspection, the subject was much emaciated and some fulness of right hypochondre extending across towards the left side was evident externally.

The lower portion of the right lung was of morbid red colour and adherent to the diaphragm. Liver enlarged, the convex surface of its right lobe slightly adherent to diaphragm, on separating which adhesion a large abscess containing nearly two pints was opened, most of its contents were puriform, the rest a brownish serum. Left lobe adherent to the stomach; and there was an abscess in this part of the liver containing five oz. of glutinous, brown, thick fluid; the sides of the cavity were in a sloughing state. Gall-bladder of pale colour much shrunk and flaccid, contained about 3iss. of opaque orange-coloured oily fluid. There were numerous small ulcerations over the mucous membrane of the colon, the internal coat of the rectum exhibited morbid vascularity, thickening and slight appearances of abrasion.

Although the frequent calls to stool were almost the only symptom of which this patient complained, there never was any great quantity of blood or slime voided after he came to Hospital; on many days little or none of either. There was no rigor at any period of the disease, but the local enlargement, tension of the muscles of belly, rapid pulse and irritation of the bowels left no room to doubt what sort of disorganization was in progress. I know not if suppuration of the liver *with sloughing of the sides of the abscess* be capable of recovery. This poor lad had not discretion and resolution to submit to that system of abstemious diet, with the aid of which only we can expect that the best directed treatment may sometimes effect the removal of incipient abscess of the liver: his ingenuity was exerted in procuring undue quantity of food, and prohibited articles were observed in his stools. Those who are disposed to ascribe tropical dysentery chiefly to disordered state of the bile, and the dark or black colour of the alvine evacuations generally to cystic bile, should compare the colour of the stools

during this lad's disease, with the appearance of the gall-bladder and its contents as observed on dissection.

The following is one of those rare instances which I have met with, wherein the pulse was for several days below 90, though an abscess had formed in the liver.

OBS. XII. — H. King, æt. 24; a sailor two years in India, had ague in China in 1829, and was afterwards in good health until his return to Calcutta in 1830. He had an attack of continued fever and was treated in Hospital from 23d April to 13th May: he was then bled from the arm, had leeches to the head, and was purged freely. He had been convalescent 17 days before leaving Hospital, but unfortunately, instead of joining a ship, he went and lived at a punch-house for 32 days, during the last four of which he was exceedingly ill with pain in the belly and round the loins. On this second admission into Hospital on the 14th June, he had slight pyrexia, an enlarged liver, and pulse at 112. He was treated with repeated V.S. leeches, and the usual course of calomel and purgatives, and subsequently blisters were applied. He became weak and fretful, the liver remaining large, and he died on the 25th June. From the 16th to 21st June the pulse, as he rested in bed, never exceeded 86, except on the evening of the 19th, when it was 110, and on the evening of 20th, 92. He never had any rigor or any dysenteric symptoms.

On post-mortem inspection the subject was found emaciated, right side tumid. The right lung was adherent to the upper surface of diaphragm. Liver much enlarged and the convex portion of the right lobe adhered to the diaphragm; on separating this attachment a large abscess was opened, which extended to the centre of the liver. The gall-bladder was contracted and flaccid, covered with a false membrane, and its base adherent to the contiguous part of the colon.

OBS. XIII. — G. N——, a stout, tall and muscular seafaring man of light complexion, 27 years of age, arrived in India in December 1827, after a very long voyage from Europe, and lived temperately on board ship in the river. Was taken ill on the 23d January, 1828, with ardent fever, anxiety, tension and fulness at the epigastre, and pain over the whole right side of the chest and belly. He was freely purged and bled four times in the first four days. On the 5th day he had no treatment but a scruple dose of calomel with two grains of opium at bed-time; a purge was given next morning and 30 leeches were applied. By these means the pain in right side was moderated, but not removed; the pulse remained full, skin dry, tongue much loaded with white mucus. An attempt was now made to salivate the patient by six or eight grains of calomel every six hours. This was repeated daily, on 29th, 30th and 31st, without benefit; some pyrexia and a dry hot skin continuing. On the 1st of February the same symptoms continued, the pain in the side was severe and increased by respiration; 30 leeches were then applied to the side, and the small doses of calo-

mel repeated, but without effect. On the 2d February, pain and pyrexia were unabated and a blister was applied; various palliatives were used from this date till I was first called to visit this patient on the 10th February. He was then suffering from a troublesome cough, with copious puriform expectoration of a yellow bilious colour and bitter taste. He gradually sunk under this sort of hepatic cough with bilious expectoration, and died on the 28th February.

On dissection, an enormous abscess of the right lobe of the liver was found to have opened through the diaphragm into the right lung. Part of the right lung was adherent to the upper surface of the diaphragm, and in a state of induration and suppuration. The early history and treatment of this case were put into my hands by the medical man who requested me to see the patient with him, and he concurred with me in considering it a good example of the inutility of even copious V.S. in a severe case of hepatitis; unless we persist in the bloodletting with corresponding accessory treatment of every sort, until the symptoms of inflammation are entirely subdued. The patient was lost from the moment that daily detraction of blood and active purging were omitted. The neglect of V.S. on the five last days of January, while acute symptoms remained; the attempt to mercurialise the system by small doses of calomel, and the application of a blister on the 2d February, while pyrexia and severe acute symptoms still existed, were all injudicious.

The obstacles to the accurate and satisfactory treatment of acute hepatitis, and of severe acute dysentery, on board merchant ships in the river Hooghly, during the cold season, are almost insuperable.

The danger of omitting to employ appropriate diet, during the progress and treatment of severe acute hepatitis, need not be better exemplified than in the following case. The patient, though tolerably submissive to medical treatment in other points, was totally intractable on the subject of diet.

OBS. XIV. — D. Dominique, æt. 44, a stout French sailor, of dark complexion; a hard-working man, of regular habits, and good conduct; recently arrived from France, and had been living on board ship, when he was taken ill on the 27th November, 1830. The surgeon stated his complaints to have been at first fever, and then in succession gastro-enteritis, and hepatitis; for which he had been treated on board ship until the 4th December; and in that interval had 40 leeches applied to the belly, was bled from the arm to *eight ounces!!!* and used purgatives. On arrival at the Hospital, on the forenoon of 4th December, he appeared exceedingly exhausted and fatigued by the removal, and he was very pale: his pulse was rather weak, tongue white, belly tense, liver very hard, and he had a troublesome cough. The bowels were costive.

He was washed with hot water, while he remained in the recumbent position; and had an enema. In the course of the day,

he took \mathfrak{z} i. of calomel, with \mathfrak{z} ss. of compound extract of colocynth; followed by one drachm of compound powder of jalap: which produced only two stools. After a few hours rest, his pulse had risen slightly, and though there was but little morbid heat, it was considered requisite to take 20 ounces of blood from the arm, and he had

Calomel.; Extract. Colocynth. Comp.; Pulv. Scammon Comp. $\mathfrak{a}\mathfrak{a}$ \mathfrak{z} ss. — which were given in Syrup, as he refused to take any more pills.

Dec. 2th. — He was purged freely, and felt better; cough moderated; belly generally softer, but the right lobe of liver was hard, large, and tender if pressed. Pulse soft, and natural.

R. Calomel., Extract. Colocynth. Comp. $\mathfrak{a}\mathfrak{a}$ \mathfrak{z} ss. at 7 A.M. Ripet. V.S. ad \mathfrak{z} xxii. — in the morning. Apply 12 leeches to the region of the liver, at noon.

At 4 P.M. — Had only one scanty and very light-coloured stool, after which he was seized with spasms in the belly, and some symptoms of cholera, attended with great anxiety, a soft pulse, and the tongue was *cool*. Was ordered calomel \mathfrak{z} i., Opii. gr. ii. after which he became easy, and slept well at night; the leech bites were bleeding freely next morning: the patient's tongue was warm, moist, and white; there was no pyrexia, and the apprehension of cholera had subsided. Leeches were applied to the belly daily for a week: and active purgatives with calomel were taken every day.

Dec. 13th. — The belly had become less tumid, and softer; the tumour of liver more distinct and circumscribed; the mouth was sore, and he felt weaker. The pain of right side was subdued; (at least he did not acknowledge any pain on pressure,) the enlargement of the liver remained, but it was softer. After this a blister was applied to the right side, which was kept discharging by the savine cerate; a small number of leeches was applied daily to its surface: and liniment. hydrarg. was rubbed over the side of belly and chest, where the blister had not reached.

The patient now became low-spirited, said he was determined not to die of debility, and that unless unrestricted quantity of food were allowed, he had resolved to procure it. In this he was as good as his word, for by the aid of his messmates and others he was well fed, and had no wish to conceal that fact. The first unfavourable symptom which arose from improper diet was a return of cough; then gradually increasing emaciation, and a sharpness of visage; followed by dysenteric symptoms, with blood in the stools. He lost all hope, and refused to take any remedies: the evacuations assumed the appearance of dark-brown water, mixed with blood, and were of a horrid putrid odour; he was unable to rise to stool. Still the pulse did not exceed 86 when he was in the recumbent posture. He died on the 8th Jan. 1831.

Dissection, nine hours after death. — Subject emaciated; universal adhesions of the right lung, apparently not recent. Liver

much enlarged, and of pale drab colour, its structure indurated; convex surface of the right lobe extensively adherent at the space between the 7th and 8th ribs: and at that part contained a large abscess, very near the surface; the margin of the right lobe adhered to the colon. There were numerous small ulcers in the colon and rectum. Mesenteric glands enlarged; cellular texture at the root of the mesentery consolidated.

It is not common to find abscess of the liver, as in this case, combined with pale degeneration.

Up to the 13th December there appeared room to hope that the disease might have been cured by persistence in a correct treatment, so as to promote absorption. In all cases of inflammatory congestion where there is interstitial deposit, and in cases of incipient abscess, where patients possess tolerable stamina, we can hardly advise too spare a diet: bread and water in small quantity are sufficient while any pyrexia exists; after that is subdued, tea with a limited quantity of bread, not exceeding $\frac{1}{2}$ ss. daily, and a small cup of gruel once a day, will assuredly help us to cure more bad cases than any ample allowance of food. We are precluded from allowing any increase of diet while the disease is tending to abscess; or while we can hope in any degree to aid the removal of the complaint, by persisting in restricted quantity of food. Small as the hope of cure may be from absorption of an incipient abscess, I hold it to be infinitely greater than any chance of recovery, after the bursting of hepatic abscess, even in the most favourable direction. Patients of bad habit of body, with scorbutic diathesis, or having other degenerated condition of the blood, are difficult to manage at any stage of the disease: such subjects are exceedingly unlikely to recover after abscess has formed.

Sometimes a more slow and insidious disease of the liver goes in to suppuration, with but few indications to warn us of the patient's danger. The continuance of slow fever, with slight habitual diarrhoea, and tension of the belly generally, or tension of the recti muscles only, should make us very vigilant in our examinations and active in our treatment: as we know how frequently liver abscess in Bengal runs its course without active pyrexia, and with but little pain at the part affected.

OBS. XV. — On the 9th October, 1829, Hollman came to me for a prescription, in consequence of a "cold and headache," with which he had been suffering for six days. He said his illness was caused by getting his feet wet. He was rather a spare subject, of middle size, and light complexion, 37 years of age; 18 of which he had resided in India. He led a sober, active life, as superintendent of a place that was not laborious, but required his being out early in the mornings, and he frequently got his feet wet in the dew on the grass.

He had taken two doses of salts, and bathed his feet in hot water at bed-time, for several nights, with no benefit, before he came to me: he had then no pain, except in the forehead, and but little

pyrexia ; there was much elastic tension, and general fulness at the epigastre, but he had no pain at that part on pressure, and there was no pain in the right shoulder. The tongue was moist, and loaded with yellowish mucus ; pulse 92 and soft ; skin always dry, the urine very high-coloured, and he usually had some exacerbation of fever in the evening. He refused to be bled from the arm, therefore 30 leeches were ordered to the liver, and to be repeated next morning. Ten grains of calomel with four of extract of hyoscyamus, and as much compound extract of colocynth, were ordered at bed-time every night ; and a brisk cathartic of senna and salts in the mornings. I saw nothing more of him for some days, he afterwards told me the medicine was taken twice, and he only applied 20 leeches once ; which were put to the temples, as he asserted he had no fear of liver disease, and felt no pain in the side. At the end of two days he went out, and attended to his business ; feeling, as he said, only the remains of his cold. On the 16th October, he had a return of fever, preceded by much chilliness, but no rigor : pulse 92, and rather hard. He had frequent calls to stool, the evacuations were scanty, and of dark colour ; there was now an exacerbation of fever every evening, but he was never entirely free from pyrexia. The elastic tension at the epigastre was rather increased ; and he felt some difficulty of breathing. Thirty-six leeches were now applied to epigastre. He had ℥i. of calomel at bed-time, and a purgative of compound powder of jalap next morning ; which operated freely, but the pyrexia continued, and his tongue was loaded with a thick, moist, white mucus. On the 17th October, thirty more leeches were applied to the right side, and he had ℥i. of calomel, with extract of hyoscyamus and colocynth, each four grains, at bed-time.

Oct. 18th. — The exacerbation of fever last evening was rather less than before ; but he had a very restless night. There is some pyrexia this morning, with a loaded moist tongue, high-coloured urine, cough, and anxiety ; he is obliged to rest with his head and shoulders much raised, and is troubled with flatulent eructations ; the elastic tension across the epigastre continues ; but he says pressure over the liver gives no pain. Pulse 96, and weaker.

Apply twenty leeches to the Epigastre. — R. Pulv. Jalap. Comp. ℥i. ; Pulv. Scammon. Comp. (Ph. Ed.) ℥i. ; Aq. Font. ℥iss. misce. To be taken at 7 A.M. Olei. Ricini. ℥i. at noon. Repeat the Calomel, Colocynth, and Hyoscyamus, at bed-time as last night.

Oct. 19th. — No material change, and he does not appear much weaker, tongue cleaner, pulse 104, and rather fuller since the leeches yesterday. He has been freely purged ; and the stools are of dark-grey colour.

Apply 12 leeches to the Epigastrium ; all medicine of yesterday repeated.

Oct. 20th. — He is not much better ; pulse 104, and weaker ; the fever is not very ardent, and the evening exacerbation is less distinct. He has been frequently purged, evacuations copious, and

a dark brown water. The sense of flatulence and the tension across the epigastre continue; he asserts that he has no pain. Mouth affected by mercury; the gums are very painful and red, but there is no free ptyalism.

R. Pil. Hydrarg.; Extract. Colocynth. Comp. āā gr. vi.; Extract. Hyoscyami. gr. iii. ft. Pil. ii.; two pills at bed-time.

Oct. 21st. — Four stools, watery and dark coloured; no material change in other respects. Repeat the above pills twice a day.

Oct. 22d. — He is more purged, but the stools are of the same sort; his mouth is more painful. Pills repeated as yesterday.

Oct. 23d. — There is some increase of pyrexia, and dryness of skin since last night; he is pale, and very weak; stools as above; pulse 112, and rather fuller; other symptoms not abated.

Apply ten leeches to the Epigastre. — R. Calomel ℥i.; Antimon. Tart. gr. ii.; Cretæ. Præparat. ℥ss.; Sacchari., Pulv. Gum. Acaciæ, āā ℥i. misce, et divide in chart. x.; one powder every three hours. Pulv. Jalap. Comp. ℥i. early to-morrow.

Oct. 25th. — He was freely purged, and feels weaker; the powders were repeated yesterday, every three hours; a slight morbid heat with dryness of skin continues.

R. Extract. Colocynth. Comp.; Pil. Hydrarg. āā gr. v. Pulv. Jacobi. gr. iii. misce, fiant Pil. iii. — m. et v. quotidie repetendæ.

Oct. 28th. — No alteration, except that he is too much purged, and the mouth sorer; some pyrexia remains; pulse 120. Medicine omitted.

Oct. 31st. — No material change, except a slight increase of evening pyrexia; pulse 116. He had six scanty, watery, dark-brown stools in 24 hours; mouth still severely affected; says he has no pain; tension across the epigastre rather increased.

Apply a blister to the Epigastre. — R. Magnesiæ Sulphatis, ℥ii.; Magnesiæ ℥i.; Aq. Menth. Pip. ℥iiss. misce. To be taken at 7 A.M. and repeated at noon.

November 1st. — The stools are more copious, watery, and of a darker colour: tongue loaded in centre with brownish mucus, its edges are a morbid red. Repeat medicine as yesterday.

Nov. 2d. — Purging of the same dark watery fluid, more troublesome; he persists that he has no pain. Tension at epigastre unabated.

R. Extract. Colocynth. Comp., Pil. Hydrarg. āā gr. vi.; Extract. Hyoscyami. gr. iv.; misce, fiant Pil. ii. n. s. Magnesia and Epsom Salts, as before, in the morning.

The pyrexia remained in slight degree, with a brownish tongue, which was dry in the centre, moist and red at edges; he gradually became weaker, and died on the 12th November, 1830.

On dissection the liver was found enlarged, its convex surface covered with a thick coat of coagulable lymph, and it contained two large deep-seated abscesses; the left lobe adhered to the stomach, the right to colon. There were numerous small circular ulcers in the colon.

This patient was a man of sober habits, and excellent conduct; his life was lost from want of V.S. on the 9th October, and two or

three subsequent days. He had an idea that at his time of life, and after so many years residence in India, with sober habits of living, he was not liable to liver disease; therefore he would not at any time submit to be bled: and after applying leeches once to his head, he attended to his daily business. He never acknowledged any pain on pressure at the epigastre; but it is hardly possible to believe that so much superficial inflammation at the convex surface of the liver, with fulness at epigastre, could have existed without morbid sensibility on pressure. He was not an Hospital patient.

OBS. XVI.—A medical man, 27 years of age, of dark complexion, and rather stout make; arrived in Calcutta in August, 1827. He was habitually temperate in eating and drinking, but utterly careless of his health in every other respect. He had been used to field sports at home, and tried the same amusements here in the most imprudent manner; going out many miles before daylight in the cold foggy mornings of November, and often riding and walking till near mid-day, when the sun was very hot: going sometimes half the day without food. He had several slight feverish attacks in the latter end of November, which were but indifferently moderated by saline purges. He continued his sporting excursions, and in the beginning of December had a return of feverish attacks of increased severity; there was now constantly some slight pyrexia present, which however did not prevent his persisting to go out as usual: and he took some hot brandy and water at night, to check a troublesome purging.

He applied to me for advice on the 14th December, and gave the above history of his proceedings. There was then much fever, pulse 112 and full; face flushed; tongue loaded, brownish, and moist; urine high-coloured. He was suffering from great anxiety, and pain under the right false ribs, that was increased by pressure: there was evident enlargement of the liver. He had at this time frequent stools, the evacuations scanty, fæculent, and of deep orange colour, with a little slime.

He was immediately bled to $\frac{1}{2}$ iiss.; and took Calomel \mathfrak{z} i. with two grains of Camboge, added to Scammony, and Compound Extract of Colocynth, each four grains.

At 4 P.M. he had several copious stools, of dark grey colour, but the fever was unabated; he was again bled to $\frac{1}{2}$ iiss. and ordered \mathfrak{z} i. of calomel at bed-time.

Dec. 15th.—He is less feverish; but the liver is very little decreased in size, and still pained on pressure.

V.S. ad. $\frac{1}{2}$ iiss. — R. Pulv. Jalap. Comp. \mathfrak{z} i. at 7 A.M.; apply 32 leeches over the region of the liver at noon.

Vesper.—He has had many stools, not very copious, but of various colours, partly of the deep orange appearance before mentioned, with some slime and blood; force of circulation much subdued, but face still flushed.

Apply 10 leeches to the right side. — R. Calomel, \mathfrak{z} i; Extract. Hyosciami. gr. iv.; fiant Pil. ii. To be taken at bed-time.

Dec. 16th. — Slept, and has very little pyrexia, but there is a circumscribed flush in the cheek; tongue dry, of morbid red colour, not much loaded in centre. Pulse 116, rather hard, but small; tenderness on pressing over the liver unabated, and its size not much decreased; skin always dry; he suffers from anxiety and his strength is reduced; at the same time there is reason to fear that the acute disease in the liver is not removed.

Apply 16 leeches over the region of the liver. — R. Calomel; Extract. Colocynth. Comp. āā gr. v.; to be repeated morning and night daily.

Dec. 18th. — Freely purged, stools a dark grey colour; mouth sore; pulse 118. Heat of skin moderated, but a small circumscribed flush of cheek remains.

Apply a blister over the enlargement of the liver, which is to be kept open for 10 days; camphorated mercurial ointment to that part of side, chest, and belly not covered with the blister.

R. Extract Colocynth. Comp.; Extract. Hyoscyami.; Pil. Hydrarg. āā gr. vi.; morning and night daily.

The circumscribed tumour of liver slowly increased, and in a few days dysenteric symptoms became very distressing, but were restrained by the usual remedies. On the 17th January another blister was applied over the tumour of liver.

January 20th. — Although there had been no distinct rigors since a very early period of the disease, it was too evident that an extensive abscess existed, while the patient's strength was declining: therefore colombo and mild tonics were administered, with the view of supporting his strength. These remedies were ineffectual. He went to sea on the 13th February; and I was informed that the abscess of the liver gradually increased in size, but had not burst on the 25th February, when he died.

There was probably an abscess in the liver of this patient before the treatment was commenced on the 14th December; but I ascribed the want of success, principally, to his eating soup during the use of active antiphlogistic remedies, when he should have lived on bread and water.

OBS. XVII. — John Thompson, æt. 50, a sailor of the ship *Warrior*, rather a slight made man, of dark complexion. Has been 9 months in the Indian seas; and arrived from Batavia a few days ago. He was landed sick and sent to the General Hospital on the 20th September, 1830; having been ill 14 days with enlarged liver, for which he had been bled twice, on board ship, and had a large blister to the right side. The mouth was then sore from mercury; the liver enormously enlarged, so as to be seen as well as felt below the cartilages of the ribs; and there was reason, from the accounts of the progressive increase of the disease for 14 days, to fear that an abscess had already formed, although there was no positive proof of this. He had no pyrexia on admission, and no pain in the right shoulder; the pulse 84, was soft and rather full, and it did not exceed 86 while he was in the Hospital, until the day the abscess burst.

He was bled from the arm once on admission, and had the usual

purgatives, with calomel, and leeches to the scorb. cordis and side; followed by a blister, and afterwards camphorated mercurial ointment was used: but nothing arrested the gradual enlargement of the liver, debility increased, with anxiety. On the 29th September, at 10 P.M. he appeared very uneasy and agitated, the pulse rose to 124; he was incoherent, the feet became cold, and the tumefaction of the liver subsided. He remained restless all night, and died at 3 A.M. On dissection, the subject was emaciated, old adhesions were observed in both sides of the chest. The liver enormously enlarged and of dark colour, its texture soft, and easily torn; a large abscess at the lower edge of right lobe had burst into the cavity of the abdomen. There were no adhesions of the liver either to the diaphragm or to other parts; there were ulcerations in the cæcum.

OBS. XVIII. — John Sticklie, æt. 48, a tall, thin man of light complexion; had an enlarged liver for four months, and had suffered from dysenteric symptoms during the last 23 days: therefore he was sent from his ship to Hospital on the 25th January, 1829. He had been bled, and blistered, and had taken mercury to affect his mouth slightly, before he was landed from his ship. When admitted, he was weak and exhausted, had a dry, brown tongue, pulse 116, general tension of the belly, and enlargement of the liver. He died on the 27th January. On dissection, universal adhesions were found in the right side of chest, apparently not recent; lungs not diseased. Liver large, and slightly mottled on the surface. There were five distinct abscesses in the liver: of which, two were large, and deeply seated in the centre of right lobe; one small abscess not quite the size of a pigeon's egg, was situated near the anterior edge of the right lobe, low down at the right side; and two smaller abscesses, not half the size of a marble, were sunk just below the surface at the convex portion of the right lobe, but evident through the peritoneal coat. A distinct ecchymosed spot, the size of a small bean, was observed at the concave surface of the left lobe. Colon contracted; a few small circular ulceration existed at its transverse portion: at which part there were also several very distinct cicatrices of large size, probably the effect of disease at a remote period. This is the only case in which I have met with the whole series of disease, consisting of ecchymosis, small abscesses, and large abscesses, in the same subject. This man had never resided in Bengal: I was informed he had been at N. S. Wales, and had visited several Islands in the Indian Seas, within the last 12 months.

OBS. XIX. — In the only case where I have seen a superficial abscess of the liver, exactly under the ligamentum latum; the man was unable to lie on either side, but was obliged to rest on his back, with the shoulders very little raised. This patient was an emaciated European, named Lowder; who had resided two years in Bengal, employed as a provisioner. He came to the General Hospital on the 22d September, 1831, in the lowest state of misery

and distress; having been ill with a purging for nine weeks: he went to stool 20 times per day, and voided much blood. He had tried various remedies without success; but can hardly be supposed to have followed any systematic treatment, as he said eight leeches had been applied to his belly, but he had not been bled from the arm.

On admission, he had frequent stools, and voided much blood; part of which was in coagula. His pulse was 124, and weak; hands cold; he had occasional hiccup, and was very feeble, unable to rest on either side. There was a fulness at the epigastre, inclining somewhat to the right side; the rest of the abdomen was flat and inelastic, pressure over the belly caused little pain, except at the epigastre. He continued low, and cold, without any favourable symptom, and died on the 27th September.

On dissection, numerous sloughing ulcers were found in the colon. The liver was rather larger and paler than usual, and there was an abscess under the centre of the ligamentum latum, the size of half a large orange; there were slight soft adhesions, for the space of three-quarters of an inch round this abscess. The surface of the cavity was in a sloughing state; and the diaphragm only intervened between the upper edge of this abscess, and the pericardium. The gall-bladder was covered with a false membrane, and rather smaller than natural.

The forms of disease described in many of the foregoing examples are with difficulty cured, even by the most active and persevering treatment. Certainly there are numerous cases in which Hepatitis is less violent in degree, and less rapid in progress: we would not expect that quite the same treatment could be required for a modified description of disease; at the same time, I would advise great caution, decision, and perseverance in the treatment of complaints which are so prone to run on to a dangerous state. I will only say that patients who ought to be cured, I fear do sometimes lapse into a most hopeless condition, from one or other of the following circumstances:

1st. Where a system of very active treatment for acute cases is suddenly remitted after two or three days, and at the same time a premature return to a full diet, gives rise to vascular repletion, and increased action of the heart and arteries, causing serous interstitial deposit, and central abscess of the liver.

2d. When V.S. has been either omitted, or inefficiently used at the commencement of acute inflammation of the liver; and the cure trusted to leeches and mercury; at the same time that low diet and tranquillity in the recumbent posture have not been strictly attended to. The more urgent complaints may be moderated by such indecisive treatment; although the disease, attended with obscure symptoms, is prolonged for several weeks; after which an extensive abscess of the liver is almost inevitable.

CHRONIC DISEASES OF THE LIVER.

SOME of the following cases might perhaps, from their long duration and slow progress, be deemed Chronic Hepatitis: but it appears to me that many of the cases usually denominated chronic differ, rather in degree than in any other essential, from the acute disease; and require more perseverance in the use of remedies; although the same active treatment is not necessary as in acute cases. In fact, our distinct views of liver disease, and satisfactory modes of cure, refer almost entirely to the acute forms; and as we lose sight of those, the management of the disease becomes vague and uncertain.

Some persons lose their health in Bengal in a very gradual manner, becoming emaciated, and having returns of fever for a few days, once in two or three weeks; they then suffer from slight pyrexia almost every day, attended with more or less of diarrhœa, and followed after some weeks by hectic, and quick pulse: they very often die from abscess of the liver, which is attended with little pain during its progress. The muscles of the abdomen in these cases are usually somewhat tense, especially the right rectus; the belly is frequently not timid, and a careful examination detects only a trivial enlargement of the liver.

In the two following cases we may be inclined to believe that there was some slow inflammatory condition of the capsule of Glisson, the gall-bladder, and of the adjacent part of the liver, connected with disorder at the duodenum. This opinion of the nature of the disease would arise from considering the exact situation of morbid sensibility when pressure was made over the right hypochondrium, (the pain being always fixed in the same spot, and of circumscribed extent,) connected with some of the other attendant symptoms. Cases nearly similar to these are sometimes attacked with pain extending to the top of the shoulder and lower angle of the scapula; and they are occasionally followed by abscess of the liver.

OBS. XX. — A gentleman, aged 33 years, of dark complexion, active habits, and very temperate in his living, four years resident in India; applied to me on the 5th February, 1827, for advice, on account of a fixed pain in the region of the gall-bladder, attended with irregular state of the bowels. He had generally a diarrhœa, the evacuations for the most part dark, fluid, frequent, and scanty; occasionally there was a suppression of stools for a day or two, and then the looseness returned. There was a slight degree of feverishness constantly present; marked by thirst, a frequent pulse, and white furred tongue: his appetite was indifferent, food always produced uneasiness, and sometimes nausea; a considerable degree of emaciation had gradually taken place.

These complaints were of 16 months duration; he had been several times under the influence of mercury, had used leeches, and the side had been blistered many times; but without benefit.

Some of his friends despaired of his recovery in India, and others tried to persuade him that the pain in the side was *rheumatic*!! They all acknowledged that he had been gradually wasting in strength for many months, and was now much altered in appearance. On examination, I found a distinct tumefaction just below the centre of a line drawn from the umbilicus to the right nipple; and pressure at that part, or holding the body very erect, caused pain. It was evident that he was suffering from a turgid state of the gall-bladder, with some inflammatory condition about the capsule of Glisson; probably attended with slight and circumscribed inflammation of a portion of the liver. The inefficacy of his former treatment appeared to me to have depended on want of sufficient perseverance in local bloodletting, while more food had been allowed than was consistent with beneficial operation of the medicine. He was therefore restricted to tea, bread, and toast water. Eight leeches were applied over the region of the gall-bladder daily, for four times. He was ordered six grains of compound extract of colocynth, with four of calomel, and four of extract of hyoscyamus every night, and a drachm of compound powder of jalap every morning. Quietness in the recumbent posture was enjoined, for the purpose of not exciting frequency of pulse, and to prevent his feeling the debility arising from low diet.

February 9th. — He has had from three to five copious stools every day, and is certainly less feverish; his tongue is cleaner; morbid sensibility in region of the gall-bladder decreased. The same medicine was ordered to be repeated daily; eight leeches were applied to the seat of the pain every second day; and he was allowed a tea-cupful of gruel daily at noon.

Feb. 21st. — Has had four or five free stools daily; evacuations of lighter colour: mouth slightly effected by calomel. The pain at right side very materially decreased; the habitual febrile state has subsided; his strength does not appear much lowered by the treatment, and he is inclined to eat, if allowed. A small blister to be applied over the pained part of the side, and kept discharging by savine dressing. The former medicines and leeches were now omitted, and he was ordered to take

Extract. Colocynth. Comp. gr. vi. — Pil. Hydrarg. gr. iv. every night at bedtime; — and

Pulv. Jalap. Comp. — Pulv. Scammon. Comp. (Ph. Ed.) ãã ʒss. every morning.

March 3d. — The bowels have acted very freely, three or four times a day. The erect posture, and leaning back, cause no pain in the region of the gall-bladder; he is free from fever, has a clean tongue, and feels hungry, thin, and active; declaring that there has been more relief from the medicines of last month than he had experienced from all the treatment of the previous year. Blister allowed to heal. He was directed to take soup and bread pudding, or similar food for dinner; to take exercise in a carriage; and instead of the former medicine, a small tea-spoonful of Chel-

tenham salts in half a tumbler of tepid water every morning, and two of these pills every night at bed-time.

R. Scammon. Gummi-resinæ., Ex. Colocynth. Comp. āā ʒi. — Saponis. Duri., Cambogiæ, āā gr. xv. — misce, et divide in Pil. No. xxx.

This treatment was continued daily for three weeks; and after that the pills and Cheltenham salts were taken twice a week during all the hot weather. The usual diet of health was gradually resumed, but wine proscribed for many months. After recovery, exercise on horseback was advised. This patient recovered entirely, and has not since been one day confined to the house; but directs a mercantile business, requiring very active exertion.

A protracted disease of this sort in a person not entirely tractable on the score of diet is not likely to be remedied by any plan of medical treatment.

OBS. XXI. — A similar case, but of slighter description, came under my care on the same season with the above; the patient was rather a smaller man, and only three years in India; his complaints were of eleven months' duration when he applied to me; and there was less tendency to diarrhœa, and less feverishness; but the circumscribed pain exactly in the region of the gall-bladder had obstinately resisted treatment for nearly a year, and a short sea-voyage had been tried without benefit. He also had taken mercury slightly to affect the mouth more than once; and had applied leeches in succession for a number of days, and he had been blistered. His residence and occupations were very unfavourable to recovery, and therefore I advised a removal for some months. Six leeches were applied daily for three days, and after that four leeches every 2d day for 10 days more. Blue pill and colocynth were used at night, and a mild aperient in the mornings. The nitro-muriatic acid bath was also used to the feet every night for 15 times. A vegetable diet was advised in very small quantity: and all active exertion prohibited. This patient improved slowly from the middle of February to the 26th of March. I then found it requisite to follow a more active purgative treatment for near three weeks, and he was entirely relieved; but on omitting medicine there was a great tendency to constipation, and the patient was pale and weak. He derived much benefit, when in this constipated state during convalescence, from taking in the morning a small wine-glassful of compound decoction of aloes, daily for a fortnight, and two of the following pills every third night.

R. Scammon. Gummi-resinæ., Ex. Colocynth. Comp. āā ʒi.; Saponis. Duri., Cambogiæ, āā ʒss. — misce, et divide in Pil. No. xxx.

The more tardy recovery of this patient may be ascribed to want of active purgatives, and to insufficient number of leeches at first. A reliance on the nitro-muriatic acid bath, also in some degree stood in the way of better remedies. From these causes this patient was twice as long under treatment, as the more protracted and severer case that stands before it. However, I had the satisfaction to find him fit to attend to business, by the beginning of

June. I think no one will hesitate to follow the more active mode of treatment, by which the early recovery of the first of these cases was accomplished. We have occasion to see complaints of this sort every year in Bengal, and many of them in the early stage, or even at any period, if attended by pyrexia, or by much tension at the right side, require repeated use of the lancet.

OBS. XXII. — John M'Can, æt. 20, of middle stature, light complexion, and delicate appearance. A recruit, by trade a painter : arrived from England on the 30th May, 1829. He was sent to Hospital with disease of the knee-joint, of five months duration, for which he had been cupped once, and blistered eight times. On his admission, there was not much swelling of the knee, and no external redness, but the part was rather hot, and tender on pressure : walking caused some pain ; there was slight contraction of the limb. Leeches were applied four times ; purgatives were administered in the mornings, and Plummer's pill at night, and rest enjoined.

In ten days the morbid sensibility and heat of the knee were subdued ; a degree of elastic cold swelling of the joint remained, with slight lameness. The knee was therefore packed in the mercurial plasters, and bound up as recommended by Mr. Scott. The limb was kept at rest, and the plasters renewed once in 10 days. He was allowed chicken diet, and a pint of milk. Under this treatment the swelling of the knee decreased.

July 1st. — He is pale and weak, therefore ordered to take Pulv. Colombo \mathfrak{z} i. — Pulv. Rhei, Sodæ Carbonat. $\mathfrak{a}\mathfrak{a}$ \mathfrak{z} ss. every morning : and on account of the remaining swelling of the knee, he had Pulv. Scillæ gr. iiii., Pil. Rhei. Comp. gr. vi. every night ; which usually moved the bowels three times a day.

July 7th. — He complains of cough and shortness of breath, attended with scanty viscid sputa, which have existed for four days. On examination, the chest is found well formed ; a full inspiration causes pain in the breast ; pressure on the abdomen gives no pain, except over the region of the spleen, and from thence up towards the scrob. cordis. There is no pyrexia ; urine scanty, high-coloured, and coagulating slightly when heated : he is pale, and has a clean moist tongue. Pulse 120, and soft ; he is obliged to sleep with his head much raised.

He was put on a diet of tea and bread, with sago ; leeches were applied to the left side of the chest daily, for five days, and that part was covered with a poultice after removal of the leeches : and purgatives with squills were administered. By these means the pain in chest ceased, cough decreased, and his urine when exposed to heat did not become turbid ; but he had a pain about the middle of the left clavicle ; the pulse was 120, and rather small. His bowels were kept free ; and tincture of digitalis was administered twice a day.

July 15th. — The pulse remains 120 ; he has a return of pain in the chest ; and his breathing is more hurried ; face quite pale,

and there is no pyrexia. A blister applied to the chest, and kept open; and four grains of Pulv. Digitalis are ordered to be given in the course of the day, with Pil. Scillæ Comp. and Extract. Colocynth. Comp.

July 20th. — He seems little better, but still has a troublesome cough with copious sputa, in appearance like saliva, and readily mixing with water. Pulse 108, and rather small; skin moist; tongue white, and moist. Former medicine omitted, and he is ordered Mist. Ammoniâci, with Tinct. Digitalis, three times a day. Bowels to be kept free. Under this treatment the cough decreased. Pulse gradually come down to 96, on the 22d; to 86, on the 24th; and on the 26th July, his pulse was 84, and soft; face pale, and he had very little cough. Resumed chicken diet, and was ordered

Pulv. Colombo, ℞i. — Pulv. Rhei, Sodæ Carbonat. āā ℞ss. daily, instead of his former medicine.

Seemed to be improving till the night of 8th August, when a profuse purging came on, and he said he passed some blood, but the stools were not kept. When seen in the morning, the skin was rather hot, tongue of dusky red colour and somewhat swollen, the belly full and not elastic but doughy; he felt very weak. He was ordered a dose of Pulv. Jalap. Comp. ℞ss. which produced five scanty, fluid, black stools, in the course of the day. In the evening he had no pyrexia, but there was a slight pain in the temples, and morbid sensibility when pressed over the cœcum; the tongue was clean, moist, and slightly fissured. Pulse soft; belly had still a doughy, inelastic feel. Six leeches were applied over the cœcum, and he was ordered

Extract. Colocynth. Comp., Pil. Hydrarg., Extract. Hyoscyami. āā gr. iv. at bed-time.

August 10th. — He had seven stools during the night equal to two copious evacuations, of deep rhubarb colour, and not quite fluid consistence.

Six leeches repeated over the region of cœcum. — Pulv. Rhei, ℞ss. — Calomel. gr. ii. in the morning, and repeated at noon.

He was ordered a mild purgative daily. On the 12th August, there was slight morbid heat of skin; pulse 108. He was free from pain: stools of dark colour and slimy. On the 13th, some tension of muscles of belly was observed, but pressure caused no pain. Castor oil was given in the morning, and 10 grains of calomel with extract of hyoscyamus at night. On the 16th, the recti abdominis muscles were observed to be tense; but there was no pain in the right shoulder or on pressing over the liver. Pulse 112.

August 19th. — Pulse 90; belly lightly retracted, and the recti muscles are tense; he has pain in right shoulder and down the arm, which was first felt yesterday. On the 20th, slight hardness of liver was observed; right rectus abdominis muscle more tense than the left; he was pale, emaciated, and weak. Leeches were

repeatedly applied to the liver in such numbers as the strength permitted; and afterwards a blister, which was kept open, but the symptoms of liver abscess were two evident, and progressive. On the 24th, he had a rigor at 1 P.M. vomited often, and had six stools, with a slight appearance of pus in the evacuations. The pulse gradually rose to 120, and 126. On the 27th, he had copious perspiration, and a hectic flush in the cheek; the tongue was of morbid red colour.

On the 31st August, enlargement of the right lobe of the liver was more prominent, and the skin slightly discoloured; therefore potassa fusa was applied to the tumour for the purpose of promoting adhesion of the tumid liver to the abdominal parietes, and soliciting the approach of the abscess to the surface. On the 3d September, he had a troublesome cough, with copious expectoration of yellow, muco-purulent matter, of a "*bitter stinking taste.*" The tumour of liver was less prominent; he felt easier. The urine was of a deep colour, with a white powdery sediment at the bottom of the urinal.

On the 5th, the cough had decreased, and he expectorated a thin oily matter, slightly tinged with greenish-yellow bile. He died on the 7th September, 1829.

Dissection. Subject much emaciated. Universal adhesions in the right side of the chest; lung decreased, and contained many suppurating tubercles. Partial adhesions in left side of chest, apparently not recent, and several indolent tubercles in the left lung. Liver enlarged, its convex surface adherent to the diaphragm, through which an hepatic abscess had opened into the right lung. Gall-bladder elongated and flaccid, contained about 3iiss. of straw-coloured fluid, like varnish. The capsule of Glisson and gall-bladder were covered with an adventitious membrane, apparently not of recent formation. Cystic duct obliterated at its upper part. A small indurated tumour was observed near the cystic duct, which had probably by its pressure caused the closure and cohesion of the duct, at the same time when the inflammatory process took place, by which the gall-bladder and capsule of Glisson had been covered by an exudation of coagulable lymph. Cæcum enlarged, its coats thickened, mucous membrane ulcerated: glands of mesentery and mesocolon enlarged.

OBS. XXIII. — Herrick, æt. 41, a tall, thin man, of dark complexion; has been several voyages to India in the course of 12 years, and after residing 18 months in Calcutta, had a bad compound fracture of the leg on the 3d October, 1829. He was so far recovered on the 13th March, 1830, as to be able to walk with crutches; and then had an attack of pain in the region of the liver, which was not removed by a purgative; pressing over the right hypochondre caused pain. He was put on a low diet, and had 10 leeches to the side daily for eight days, and took active purgatives with calomel or blue pill, and compound extract of colocynth.

The mouth became slightly affected, and pain of side was removed.

OBS. XXIV.—R. Child, æt. 29, of middle size and dark complexion: 10 years in India. Admitted into General Hospital, on the evening of 2d December, 1830; ill six days with pain in his liver, and fever; for which he has been purged, and has applied many leeches; he appears very low and much exhausted from the exertion of removal to Hospital. Has now an enlargement and hardness of the right lobe of the liver, attended with a slight cough, and is obliged to lie with his head much raised.

R. Calomel., gr. v.; Extract. Colocynth. Comp. ℥ss. ft. Pil. ii. \mathfrak{h} . s.

December 3d.—Had two stools; there is at present a slight degree of pyrexia, some cough and enlargement, with hardness of the right lobe of the liver. Diet—tea and four ounces of bread, twice a day.

V.S. ad \mathfrak{h} iss.—R. Calomel.; Extract. Colocynth. Comp. $\mathfrak{a}\mathfrak{a}$ ℥ss. at 7 A.M.
Apply twelve leeches to Epigastre at noon, and let him take Pulv. Jalap. Comp. \mathfrak{z} i.

Dec. 4th.—Pyrexia decreased, and he coughs less; hardness of liver not abated; he has had six stools.

Apply sixteen leeches to the liver; all medicine repeated as yesterday.—R. Calomel.; Extract. Colocynth. Comp. $\mathfrak{a}\mathfrak{a}$ ℥ss.; Extract. Hyoscyami. gr. iv. in pills, at bed-time.

Dec. 5th.—He appears better; liver decreased.

Eight leeches to the region of the liver. Pills repeated morning and night, as yesterday.

Dec. 6th.—He suffers little pain and no pyrexia. Mouth sore; only two stools.

Apply four leeches to the region of the liver.—R. Extract. Colocynth. Comp. ℥ss.; Pil. Hydrarg. gr. v.—in three Pills, in the morning.—R. Pulv. Jalap. Comp. \mathfrak{z} i. at noon.—R. Extract. Colocynth. Comp.—Extract. Hyoscyami $\mathfrak{a}\mathfrak{a}$ gr. viii. at bed-time.

Dec. 7th.—He suffers less pain; very little enlargement of the liver remains.

Eight leeches to the region of the liver; all medicine repeated as yesterday.

Dec. 8th.—Had six stools; and has occasionally a slight pain in the liver.

Eight leeches to the region of the liver; repeat all medicine as yesterday.

Dec. 9th.—He has some cough, and a slight fulness in the region of the liver remains. Milk diet allowed.

Apply a blister to the side, which is to be kept open; repeat all medicine daily, as on 6th December.

Dec. 13th.—No pain; a slight cough remains.

R. Extract. Colocynth. Comp.; Scammon. Gummi resinæ, $\mathfrak{a}\mathfrak{a}$ \mathfrak{z} ss.; Saponis Duri—Cambogiæ $\mathfrak{a}\mathfrak{a}$ gr. xv—misce et divide in Pil. xv.—Two pills every night. Chicken diet was allowed after the 16th.

Dec. 19th.—He remains much emaciated, and is very pale; tongue white, pale, and bloodless. On examination the liver does

not appear to be enlarged at present. He has a slight cough at night with some pain above the right nipple, and sleeps with his head much raised. Former medicine omitted.

R. Pulv. Jalap; Pulv. Rhei; Pulv. Calumbæ; Pulv. Zinziberis; Potassæ Supertart. āā ℥ss.; Ferri. Sulph. gr. v.—Tinct. Sennæ ℥ii.; Aquæ Menth. Pip. ℥viiss.; misce. Capt. ℥i.—Omni Mane.

Jan. 10th, 1831.—Appearance much improved. Bowels free; he has still some cough at night and tough viscid sputa. Mixture omitted.

R. Extract. Colocynth. Comp.; Extract. Hyoscyami; Pil. Hydrarg. āā gr. iv.; in pills every night.

Jan. 14th.—Discharged well. I have very seldom seen tonics or chalybeates given with advantage during convalescence from liver diseases. In the majority of cases convalescence proceeds most favourably by using a moderate and simple diet; keeping the bowels very free, the skin perspirable, and taking care to reside in a good, cool, and airy house. If a sea-voyage be available at the time of convalescence, it is beyond all other means the best to insure permanent recovery. In the following case the same mixture of purgatives, with calumba and sulphate of iron were tried, but could not be continued.

OBS. XXV.—Jacob Weaver, æt. 26, a sailor, of middle size, and light complexion; a pale and rather bloated appearance; landed from the Barque *Monmouth*, on the 20th November, 1830; his first arrival in India. He has been, while at sea, ill three months with a purging, which now continues (eight stools in 24 hours); but he has lately voided no blood: for the last three weeks he has been subject to occasional vomiting. The liver is now large, but he does not know how long this has been the case; the right rectus abdominis muscle is tense; there is slight pyrexia; tongue white, moist, and nearly clean.

V.S. ad ℥ss.—R. Calomel.; Extract. Colocynth. Comp. āā ℥ss. at 7 A.M. Sixteen leeches to the region of the liver at 4 P.M.—R. Extract. Colocynth. Comp. ℥ss.; Pil. Hydrarg. gr. v. at bed-time.

By these means he was freely purged, and the pyrexia removed; the blood taken in the morning was not buffy.

On the 21st sixteen leeches were applied, and he was better. After this, a course of mild mercurial purgatives was continued daily; and he had eight leeches to the right hypochondre every day till the 27th, whereby the enlargement and tension in the region of the liver were very much diminished.

Nov. 28th.—A blister was applied, and kept open; the same course of mild mercurial purgatives was continued daily, till the 19th December: he was then pale, and reduced, some degree of elastic fulness of belly remained, the urine was copious and pale coloured, and his remaining ailments were ascribed to languor. He had been heretofore on vegetable and milk diet, in limited quantity: but was now advised to use meat, and to take daily some calumba powder, and sulphate of iron, with mild purgatives,

as prescribed at page 284. After two days continuance of these remedies, a vomiting came on, with uneasiness and tension of the belly; and it was found requisite to omit them, and use calomel and blue pill, with colocynth and castor oil, which had an immediate good effect. He was discharged on the 29th Dec., 1830.

OBS. XXVI. — Mrs. Thornton, æt. 29, a delicate and rather small person, of light complexion, two years in Bengal. Admitted into General Hospital, 27th August, 1830; she has been ill five days with dysentery, the purging is now constant, liver enlarged, general health much impaired, debility extreme. The dysentery was treated by the usual remedies, and soon subsided; after which she suffered from rheumatism, and œdema of the feet, and had occasional slight returns of dysentery, the evacuations being generally of a pale-grey colour, and occasionally watery and frothy. She gradually sunk, and died.

On post-mortem examination the subject was found exceedingly emaciated. There were a few old adhesions in both sides of the chest. Liver slightly enlarged, and œdematous; its surface distinctly marked by the pressure of the cartilages of the ribs; colour paler than natural; texture somewhat indurated. The whole course of the colon much contracted.

I have met with 13 cases, in which the appearance of the liver on dissection was so like to that of œdema, that I should not know how to describe it by any other name; the impressions of the cartilages of the ribs being deep and distinct. The liver compared with the general appearance of the subject, was in most cases enlarged, its texture slightly indurated in the greater number; colour when morbid rather lighter than in health, and its section not bleeding much. The patients had been, nearly all, pale, leucophlegmatic subjects, with constitutions impaired by climate. This pathological condition probably might be deemed unimportant, and in itself, so far as we know, not conducive to fatal termination. The indications for the treatment of the constitutional disorder which coexists with these cases, is usually sufficiently distinct, if the patient's strength be tolerable. As the enlargement of the liver was in most of the patients evident during life, I am unwilling to pass, without notice, a condition which occasionally occurs in debilitated patients in this country.

OBS. XXVII. — Louis de Antonio, a sailor of the Portuguese ship *Temerario*, received a violent contusion on the right thigh and hip, when at sea, three months before his arrival in Calcutta, which caused an extensive abscess in the limb, and disease of the bones of the hip; with which he was admitted into the General Hospital, on the 19th October, 1829: and remained with this lingering painful disease till the 29th June, 1831, when he died exhausted. During the course of treatment for the above complaint he had symptoms of liver disease, which first began on the 14th February, 1831, attended with constipation and general uneasiness. Purgatives with blue pill were administered on the 16th;

there was then general uneasiness of belly, with flatulence; some tension in the region of the liver, and a bitter taste in the mouth. On the 17th, fulness was apparent in the region of the liver, and some uneasiness over the whole belly; but this was mostly felt towards the left hypochondre; and there was no pyrexia. He was briskly purged by 10 grains of calomel, and as much compound extract of colocynth. Leeches were repeatedly applied to the epigastre, active purgatives administered daily, and he was put on low diet; by these means the pain and uneasiness in the liver were slowly subdued.

On dissection, eight hours after death, the subject was found much emaciated: the right leg œdematous. Extensive adhesions existed in the right side of chest, not of recent formation. Liver much enlarged, and of deeper colour than natural, its section bleeding freely; concave surface of the right lobe extensively adherent to the stomach; there was a small distinct depression like a cicatrix at the concave surface of left lobe, but there was no adhesion exactly at that point. There was extensive caries of the acetabulum and head of the femur.

The principal chronic diseases of the liver, not yet alluded to, are as important on account of the circumspect and moderate treatment to be followed in their management, as most of the diseases already spoken of are, by reason of the very active remedies which are requisite to save life in their acute stages. The following diseases of the liver, which are really chronic, have been observed in this country:

1st. The red disorganization of the liver; with slight enlargement, induration, and irregularity of surface. Red blood of an unhealthy description abounds in these patients; they suffer much from various constitutional ailments, and are distressed by disorders of the stomach and digestive organs. They generally die from extreme emaciation, which takes place rather suddenly, and is attended with a troublesome cough.

2d. The pale degeneration of the liver is generally attended with some enlargement. It occurs most frequently in persons of pale complexion, who are long resident in India; the patients are generally bloated, fat, and dropsical; they are sometimes slightly jaundiced.

Either of the above modifications of morbid structure of the liver are occasionally met with when the organ is diminished in size.

3d. Concurrent with some of the chronic indurations of the liver, the biliary ducts are occasionally found closed.

The more we have to do with the above varieties of chronic cases, in aged persons, the more shall we respect the opinion of Van Swieten, who says, "they require to be treated with the greatest gentleness, and are hardly ever to be cured." In many of these cases of extensive chronic disease, which we are obliged to acknowledge incurable, life may be prolonged, and suffering

moderated, by a temperate and scientific plan of regulating the diet, exercise, clothing, and state of the digestive organs.

In chronic liver disease, where there is some enlargement of the organ, and there appears superabundance of red blood in the capillaries as above described, the utmost temperance in food and drink must be enjoined, with daily exercise. These cases are best treated as follows :

R. Pil. Plummeri ; Pil. Aloes Comp. ; Pil. Cambogæ Comp. āā gr. iij. ; Pulv. Scillæ gr. ij. misce fiant Pil. ii.

These 2 pills are to be repeated every night ; and two table spoonful of Savory and Moore's fluid extract of sarsaparilla in the mornings. After 10 days these medicines should be omitted, and some of the following mixture taken every morning for 20 days.

R. Magnesiæ Sulphatis ℥iss. ; Potassæ Supertart. ℥i. ; Sulphatis Potassæ cum Sulphure ℥ii. ; Aquæ Bullientis ℥i. misce et cola, — deinde adde Ferri Sulphatis gr. iv.

A wine-glassful, to be mixed with as much tepid water, and drank every morning early. A tepid bath should be used twice a week. This plan requires to be followed for three or four months ; the pills and sarsaparilla being taken for the first 10 days, and the mixture for the next 20 days of each month.

In those cases where the patients are old, pale, and leucophlegmatic ; and there is a deficiency of red blood in the capillaries generally, and we find a tumefaction of the liver, which we have reason to believe is the pale degeneration, mild aperients with a very minute proportion of chalybeates are beneficial. The extract. taraxaci in doses of ℥i. twice a day, taken in syrup, and washed down with infusion of cheraytta, are also frequently very useful, and the nitro-muriatic acid bath should be tried.

Enlargement of the liver is not uncommon in Bengal in children below four years of age. It sometimes takes place in an acute form during fever, and is then generally removed by the leeches and depletion requisite for the cure of that disease. But the most frequent enlargement of the liver in subjects of this tender age comes on slowly, attended with emaciation and occasional slight returns of fever ; these children are pale, and frequently have diarrhœa, with some cough ; and in the majority of cases the enlargement of the liver is not very palpable until the constitution is much impaired. This slower description of tumid liver seems frequently the sequel of disorder of the digestive organs, of long continuance, marked by torpor of the intestinal canal ; the evidences of liver complaint are preceded by the disorder of constitution, and so distinctly supervene on it, that we cannot reasonably ascribe the whole train of morbid phenomena to the disorder of the liver, which happens among the last in the series. In these cases great care is requisite to afford the child sufficient mild food to live on, during the cure, without aggravating his malady by causing irritation and vascular repletion. Our means of cure are comprised in repetition of small numbers of middle sized

leeches over the tumid liver, as long as any trace of pyrexia and inflammatory symptoms may demand, followed by a small blister, kept open for many days, and a course of mild purgatives, so as to procure four stools daily. Jalap and scammony with calomel are the most effectual purgatives, in the majority of cases attended with pyrexia; — but I am bound to say that in nearly one-half of those cases of tumid liver, which take place slowly in pale and delicate children, mercury is injurious. In those cases, omitting the calomel, we may occasionally change the above purgatives for compound extract of colocynth and camboge, or for rhubarb and sal polychrest, or castor oil. The skin must be kept perspirable by regulated clothing and tepid baths, and a voyage to Europe should be enjoined in all cases where that is practicable.

Acute liver diseases are much more rare in European women than in the men of a corresponding class in society, by reason of their more temperate habits of mind, as well as less exposure to the exciting causes, and more abstemious modes of living. But women are often liable to insidious liver disease after fevers, and in consequence of disorders of the digestive organs, that are very apt to terminate in hepatic abscess. Therefore, in the treatment of those diseases, it is important to attend carefully to the progress of convalescence; and to regulate both diet and medicine discreetly, until the *lentæ morborum reliquiæ* are entirely removed.

JAUNDICE.

There is no occasion in this place to treat of jaundice which occurs in the course of some severe fevers, or to notice the yellow suffusion of the skin, which is occasionally observed during affections of the brain, which follow injuries of the head, but the more chronic forms of jaundice which occur in Bengal, unconnected with much febrile disorder, may here claim our attention. I find jaundice, not only during its early stage, but for a long period afterwards, while the bilious discolouration remains, very generally attended with some morbid sensibility when pressure is made over the situation of the gall-bladder and capsule of Glisson; though the uneasiness, during the absence of pressure, is most generally referred to the epigastre. The intense yellowness of the skin, and conjunctivæ, and very high colour of the urine, in some cases fades a little for a day or two, and then increases without any evident cause. The increase of yellow colour, for the most part, corresponds with augmentation of the pain when the epigastre and region of the gall-bladder are pressed, and when the bowels are costive, while the decrease of colour of the skin and eyes seems connected with free action of the bowels and diminished local pain.

During the continuation of jaundice, and especially while it is increasing, patients are affected with loss of appetite, and indi-

gestion, and sometimes are liable to sickness of stomach, flatulence, tension of the epigastre, and hypochondria ; but even when acute symptoms are present, the principal pain experienced on pressure is usually circumscribed, and fixed at one spot : sometimes there is pain in the point of the shoulder and under the scapula. Dejection of spirits, lassitude, and a bloated puffy swelling of the face, often indicate the extent of constitutional derangement which the patient is suffering. Nevertheless, we sometimes see people attending to all their ordinary occupations, and eating and drinking as usual, while the skin and eyes are of an intense yellow colour.

The stools assume a clay colour, or become nearly white in many cases of this disease ; and this absence of colour in the stools, when bile is abundantly absorbed and carried into the circulation, seems unattended with much constitutional disorder, referrible to the want of bile in the intestines, in many of those persons who are pale, weak, and leucoplegmic : but plethoric subjects, in whom jaundice takes place, and the stools are of a pale clay colour, almost always suffer from pyrexia ; and in some cases I have known robust patients die with symptoms of oppressed brain within 36 hours after the sudden appearance of intense jaundice ; for the accession of which last named disease no cause could be assigned.

Much obscurity is acknowledged to exist respecting the pathology of jaundice, therefore I have been anxious to ascertain the exact state of those parts about the liver and biliary ducts which might be implicated in the production of this disease. The almost inviolable existence of pain, which is increased by pressure, and confined to a circumscribed spot at the right side, just below the centre of a line drawn from the right nipple to the umbilicus, led me to believe formerly, that inflammation of limited extent in some part of the liver was the most frequent cause of jaundice. The more certain and more prompt cure which in the majority of cases followed a regular system of depletion, served to confirm this opinion ; but if circumscribed inflammation of a portion of the liver were the efficient cause of the disease in question, I was not able to account for the general absence of jaundice during the progress of the most unequivocal and intense inflammation of large portions of the liver, even when that disease proceeded to suppuration. At least inflammation of a portion of the liver, alone, did not appear a sufficient reason for jaundice ; although symptoms of moderate inflammation of limited extent so generally precede and accompany the yellow suffusion of the skin and eyes. Moreover, on the dissection of subjects who had recovered from icterus, only a short time before death took place from other diseases, I could not discover appearances in the liver, which enabled me to fix on any circumscribed spot as having probably been recently inflamed. But in the course of dissections, I found that albuminous infiltration sometimes takes place into the cellular structure of the capsule of Glisson.

In the beginning of this paper, at page 240, I have already

spoken of oval bodies in the capsule of Glisson which have the structure and appearance of absorbent glands. The superior gland is sometimes very small, and occasionally it is more closely attached to the side of the gall-bladder than to the cystic duct; I have seen the cystic duct obliterated, where it was in contact with this gland, when in an enlarged and diseased state; but I do not apprehend that could have any influence in the production of jaundice. The lower gland is more uniform in bulk, being usually half the size of a small bean; and it is always placed just at the commencement of the common biliary duct. The result of irritation within the sphere of absorbent vessels passing through this gland would, of course, be liable to cause such degree of swelling as might produce transient compression and closure of the common biliary duct; whereby the passage of bile into the intestine would be prevented, and in consequence of its absorption jaundice will be produced; if the obstruction be complete the patient's stools will be nearly white, or of very pale-grey colour, until the decrease of the local tumefaction permits the bile again to flow into the intestine. But in cases of jaundice attended by ardent pyrexia and intense gastro-enteritis, the colour of the stools will very often be different, in consequence of the blood poured out by the capillary vessels of the intestinal mucous membrane; as well as from other morbid secretions.

When previous inflammatory disease at the capsule of Glisson has been attended with infiltration of coagulable lymph into the cellular structure of that part at a remote period, and its subsequent absorption has left a degree of induration and constriction, a very slight enlargement of the lower gland will effectually compress the common biliary duct; and I have seen its canal obliterated from that cause, exactly at the point of contact with the tumid and indurated gland. I have some morbid preparations, which leave little doubt as to the occasional influence of those parts in disease.

The distribution of the absorbent glands in every part of the body is liable to occasional variation: so, instead of two glands, in some subjects, a chain of glands will be found alongside the biliary ducts. It appears to me very probable, that jaundice is occasionally caused by inflammation and swelling of the lower gland in the capsule of Glisson; and that a degree of compression on the ducts, sufficient to produce complete obstruction to the transit of bile into the intestine during life, might not prevent an anatomist from pushing a small flexible wax bougie along the ducts after death;—which might lead to the erroneous conclusion that the duct had been pervious, and thus prevent such accurate dissection as would have shown the actual cause of compression. The lower and larger gland, being placed close above the head of the pancreas, may, while in its healthy state, be easily mistaken for a part of that organ: but in colour, structure, and appearance, it is totally different from the firm, small-lobulated, or granular structure of the

pancreas. I by no means wish to deny the influence which biliary calculi, or tumours of the pancreas, liver, or spleen, or scirrhus pylorus, may occasionally have in producing jaundice; nor to doubt that in some rare cases that disease has been excited by mental emotions. I believe that jaundice has not been heretofore ascribed to a diseased state of absorbent glands, and am therefore unwilling to place any undue emphasis on the importance of the observations yet made on this subject. But if the lower absorbent gland, which is placed alongside the common biliary duct, should be proved on more ample investigation to be capable of frequently producing the effects which I ascribe to it; namely, while slightly enlarged, of impeding the flow of bile into the intestine; or, of entirely obstructing the passage of bile, during any temporary state of more considerable intumescence: this fact would, I conceive, have considerable influence on our opinions concerning jaundice, and on our general treatment of that disease.

For the purpose of making a satisfactory dissection of these parts, it is requisite, after opening the chest and abdomen in the usual manner, to saw or break the ribs within three inches of the spine; so that the edge of the liver may be tilted back, and the parts brought fairly into view. Whenever the biliary ducts appear to be obliterated, that portion of the liver to which the gall-bladder is attached, should be cut out, together with the capsule of Glisson and duodenum: that the ulterior stages of the dissection may be deliberately conducted on a table.

Before deciding what plan of treatment may be proper, in any case of jaundice, we should carefully inquire into the state of general health, and the nature and duration of the diseases from which the patient has recently suffered; and ascertain the state of the abdominal viscera. If the liver be found enlarged and indurated, either generally, or in part, there would be no doubt of the most proper plan of treatment to be ordered: and the employment of our remedies would be directed by considerations dependent on the state of that organ, and on the condition of the constitution.

In other cases of intense jaundice, without enlargement of the liver, but with the usual circumscribed pain in the region of the gall-bladder and ducts, the stools being nearly white, or of a pale clay colour, I would advise a treatment essentially antiphlogistic; because I find the cases so treated are cured easily, and by one series of remedies; while those cases which either do not seem urgently to require depletion, or from any particular reason are treated by other means, have tardy and imperfect recoveries and frequent relapses. So that I am always sorry to meet jaundice combined with circumstances which forbid depletion, as I have but little confidence in other modes of treatment. The most successful plan of cure is a steady and undeviating line of practice, consisting principally of depletion by V.S., leeches, active purgatives, tepid bath, and sudorifics; aided by low diet and quiescence in the beginning of the disease; followed by milder purgatives and a small

blister over the region of the gall-bladder, kept open for a long time. At more remote periods, a course of Cheltenham salts, or small doses of rhubarb and sal polychrest, (from six to ten grains of each every morning,) with gentle exercise, and frictions with camphorated oil, or lard and camphor, over the right hypochondre, should be advised; at the same time it may be proper to allow a mild diet, void of stimuli, in such quantity as may improve the strength.

In any case of jaundice, where the stools are *white, or of a very pale-grey colour*, the employment of mercurials is of doubtful propriety;* since we have evidence of the abundant secretion of bile, which is absorbed, so that its colour is visible in the eyes, urine and skin: at the same time that we have reason to believe its transit along the common duct into the intestine is obstructed. Mercury with a view to excite biliary secretion, in such cases, would be as unreasonable as the administration of diuretics to a man with a distended bladder, and whose perspiration had an urinous odour, showing that urine was freely secreted and absorbed into the system, while we knew that he had an impervious stricture of the urethra. Doubtless, calomel with active purgatives, and depletion by V.S. and leeches, are the very best means of subduing local inflammation, and removing many of its consequences, in cases of jaundice, where the bile can pass into the intestine.

I would be sorry to commend indiscriminate bloodletting for cure of the jaundice of old residents in India, who may have broken constitutions, pale faces, and œdematous feet: most of these must die, if they do not remove to a better climate than Bengal. I fear we cannot well promise that many patients of this sort shall recover anywhere, if the disease be of long duration.

As far as my present investigations regarding the pathology and treatment of jaundice will enable me to judge, I should be inclined to ascribe that disease more rarely to biliary concretions than has been usual of late years by many authors: and I doubt much the propriety of very frequent recourse to opiates on the occurrence of acute pain in the course of the biliary ducts, except in the cases which afford tolerably distinct evidence of the existence of biliary calculi.

ICTERUS appears frequently to happen in Bengal in infants soon after birth to a very intense degree; the deep orange colour of the eyes, skin, and urine, being in a majority of cases very remarkable. The jaundiced tinge has appeared from the 2d to the 13th day. In all the cases of infantile jaundice which have been under my care

* Dr. Cheyne's experience favours the same conclusion: — He says, "In large establishments for the cure of venereal complaints, jaundice not unfrequently appears during courses of mercury; and if the mercurial is not laid aside, and purgatives given, and the antiphlogistic regimen adopted, a new and alarming series of symptoms is apt to rise; the brain becomes affected; the patient becomes at first frantic, and then falls into a state of coma."

in this country, the colour of the stools, though much paler than natural, has evinced the presence of some bile ; which showed that the ducts were not entirely obstructed, and justified a favourable prognosis. All the infants whom I have seen with this disease in Bengal have recovered ; happily precluding the occasion of ultimate pathological investigation as to the local morbid condition connected with their malady.

It is remarkable, that almost all the jaundiced infants I have seen in India had suffered much compression and considerable alteration of the shape of the head, during labours that were rather severe, compared with what is usual in Bengal. In stating this fact, I do not aver that the compressing of their brain was the cause of the jaundice ; nor that the disease always occurs in this country, when the shape of the child's head has been much altered during labour.

The treatment which I have pursued in infantile jaundice, there being some bilious appearance in the stools, was to give Calomel. gr. i. — Pulv. Scammoneæ Comp. (Ph. Ed.) gr. ij. — Pulv. Jalap. Comp. gr. iv. every morning, for four days ; and then, after an interval of two days, to repeat the powders for four days more : giving a small dose of castor oil every 2d afternoon, and omitting the jalap if the purging should be too frequent, or the evacuations very watery. While this treatment is pursued, the child's belly, and the hypochondria, are ordered to be rubbed daily with warm oil : a tepid bath twice a day is useful.

LIVER DISEASE IN ASIATICS.

ACUTE liver disease is exceedingly rare among Asiatics ;* nevertheless natives of Bengal are not entirely exempt from these complaints. It is remarkable how seldom we find any palpable disease of the liver of Asiatics attending the fevers and dysentery of Bengal. During my residence in this country I have only seen two well marked cases of acute hepatitis in natives. One of these was a Mahomedan servant of my own, not remarkable for his temperance either in meat or drink. He is rather a slight made but firm and sinewy man, who was attacked with acute pain in the right side, and distinct enlargement of the liver. He had been indulging more than usual in drink, and had the appearance of ill health ; but had no sort of tremour as if from great excess in the use of spirits, and there was very little pyrexia when the disease appeared, in November, 1831. He was made to remain in tranquility, and to live on sago, soojee, (thin flour porridge,) and *coee* with water. Six leeches were applied over the region of the liver,

* Staff Surgeon Marshall speaks of having found abscess of the liver in Asiatics who were serving with the army in Ceylon. He also found abscess of the liver in Africans.

daily, for five days. Four grains of calomel, and ten grains of compound extract of colocynth, were given every night; and a jalap purge every morning. After the leeches were omitted, he was made to take a dose of castor oil daily for a week, and the same low diet was continued. This man recovered, and remains tolerably well, but has not since acquired his former stoutness.

The other case was a Hindoo Kalassee, a short and rather stout man, whose duty was to pitch the tents; his illness commenced in November, 1833, when on the march in the Upper Provinces. The enlargement of the liver was very distinct; and pain on pressing the right side acute, but there was scarcely any pyrexia, or constitutional disorder. He ascribed the commencement of his illness to a recent injury, in raising the large tents; but from the slight constitutional disorder, I suspected that the disease was of longer duration. He had six leeches applied once, and took six grains of blue pill, with 12 grains of colocynth, daily, for four days; and the liver was decidedly decreasing; but he disliked the repeated purgative, and refused to follow any farther medical treatment. This man remained with the camp, and appeared in indifferent health. In February, 1824, he died of tetanus; which appeared to me to have arisen from cold, though his relatives ascribed it to a very trivial scratch on the top of the left foot. I could not get leave to inspect the body.

DISEASES OF THE SPLEEN.

DISEASES of the spleen may be deemed important, not only by reason of their frequency, severity, and the danger with which they are attended in Bengal, but on account of the change which the constitution undergoes previous to their origin, and during their existence, as well as the modifications which they produce on the nature and tendency of other diseases that may occur at the same time. Instead of viewing the enlargement of the spleen as the principal object for investigation, it will be consistent with a correct view of the diseases now under consideration, to speak of the enlargement of the spleen as one of the phenomena usually attendant on a peculiar description of constitutional disorder. The characteristic symptoms of this disorder are general debility, paleness, and a deficiency of red blood in the capillary system of vessels; this is most remarkable in the pale and bloodless aspect of the conjunctivæ, hectic blueness or pearl-colour of the scleroticæ, and chlorotic discoloration of the visage, tongue, and gums. The circulation is generally languid, and the extremities are apt to become cold; the skin pale, shrivelled and arid. In the chronic disease, affecting emaciated subjects, we often find a dry furfuraeous desquamation of the cuticle.

We sometimes see a chronic enlargement of the spleen in adults of pale, sallow, and unhealthy aspect; who eat and drink as they did in health, and seem to endure the disease for many months without much suffering: except the inconvenience of a tumid belly, attended with shortness of breath, and occasional returns of indistinct ague. The disease is far more distressing to children; in them, if careful attention to diet, and correct medical treatment be omitted, the enlargement of the spleen, and corresponding decay of the general health are in most cases progressive, and they sink into a state of marasmus. In fact, a person who has arrived at a mature growth and strength, may exist for a while with a degree of induration and enlargement of the spleen which is incompatible with growth, or even the continuance of life in those below puberty: for we find that children with this disease soon become poor, languid, weakly creatures; whose breath and the exhalation from their bodies, have a nauseous, sickly odour, indicative of the unsound state of their constitutions. This distressing and obstinate malady is not peculiar to the natives of this country, nor is it confined to the poorer order of Europeans. I have observed the disease in its severest form to come on after fevers affecting the children of wealthy Europeans who lived in every comfort, and were attended with the greatest care. It is not unfrequently accompanied in such patients by the extreme degree of constitutional disorder which marks its advanced stages in the poorer classes of natives.

Females affected with enlargement of the spleen are liable to suffer from amenorrhœa; and cases of spleen disease, in which the periodical return is not obstructed, may for the most part be considered as having a favourable prospect of recovery. During the continuance of vascular engorgement of the spleen, patients are very prone to foul sloughing ulcers, from slight wounds or bruises: and when local inflammations exist, those peculiar characters of active inflammation, and that healthy constitutional energy, on which the deposition of coagulable lymph depends, and by which we find injuries repaired, and the extension of ulceration, as well as the progress of sloughing arrested, on ordinary occasions, seem to be in great measure, if not entirely subverted.

Blood drawn from veins varies much in appearance; sometimes it coagulates imperfectly, and no serum is separated; in other cases the cruor is black and soft, and after being exposed to the air, its surface does not generally assume that more florid colour which we observe on the top of a coagulum of blood drawn from the vein of a healthy person: and it seldom exhibits a buffy coat, except when ardent pyrexia is present, or when the disease is attended with acute pain in the side. The serum when heated coagulates as firmly as that of a healthy person, but the coagulum is more friable, and less tough; and this coagulated albumen frequently has a slightly yellowish appearance: sometimes it has a greenish colour.

Several of the characteristics of scorbutus are present during the

vascular engorgement of the spleen ; there is a tendency to hemorrhage from slight causes or injuries ; leech-bites, blisters, and issues are apt to ulcerate during the rainy season ; and at times the slightest ulcerations are apt to slough. Foul gangrenous ulcers of the lips and gums are liable to form in consequence of slight local irritation, (and often without any obvious cause,) whereby the jaw-bones become carious, and exfoliate, and the teeth fall out. Hemoptysis as well as hematemesis occasionally occur when the spleen is very large ; and probably the blood which is vomited sometimes flows into the stomach from vessels communicating directly with the splenic vein, as the intumescence of the spleen has been observed in some cases to be immediately reduced by these evacuations of blood. It is true, that profuse hemorrhages from the nose, lungs, or stomach, sometimes suddenly destroy life : but we see other cases, where the functions of the system not having been much disordered previously, the patients recover quickly after these profuse losses of blood ; and the disease of the spleen is thus entirely cured. The results of these spontaneous hemorrhages should not be forgotten, in deciding on our plans of treatment in ordinary cases of spleen disease.

Most patients, with enlargement of the spleen, are affected with a short and imperfect respiration ; the general appearance of the patient evincing that decarbonisation of the blood is insufficiently accomplished : and any attempt to take active exercise excites panting and distress at the chest. Among the usual attendants on vascular engorgement of the spleen, we may observe impaired appetite, difficult digestion, and imperfect assimilation of the food. There is generally despondency and depression of spirits ; inactivity of body, and torpor of mind, with much muscular debility : and this latter symptom is remarkable, although the patients be not much emaciated. When active pyrexia is not present, the urine is pale, often copious. In the latter stages of the disease œdema of the feet is present, and sometimes the face and eyelids are swollen. The majority of protracted cases that terminate fatally suffer from dysentery, or dropsy of the belly ; and when the abdomen is much distended from this latter cause, the superficial veins on the side of the chest and belly appear large and numerous ; showing the extent and degree to which the circulation in internal organs becomes ultimately obstructed.

Diseases of the spleen often occur in conjunction with dysentery, intermittent and remittent fevers, scorbutic affections ; and sometimes with diseases of the liver.

The tumefaction of the spleen occasionally comes on very suddenly, in the course of remittent fevers, in Bengal ; and in a few days the enlargement can be seen as well as felt, extending far below the cartilages of the left false ribs. The degree of enlargement which takes place is variable ; it is very common to see the spleen extending downwards on a level with the umbilicus ; and laterally, from its usual situation, as far as half way between the

cartilages of the ribs and navel. In extreme cases the diseased spleen fills more than half the belly, extending to the right of the navel, while its lower extremity reaches the left iliac region. Several cases of this enormous tumefaction may be seen every year in Calcutta; and some of them recover. Besides the globular tumefaction of the spleen above-mentioned, there is a more oblong enlargement, in which the anterior edge of the organ is felt deeply indented with fissures. In this description of disease, there is more induration than attends the globular tumour; and the patients are cured with greater difficulty. This is considered by the native practitioners a very dangerous and intractable form of the disease.

The greater number of cases of the affections above described are unattended with local inflammation; although there is almost always morbid sensibility on pressure being made over the left hypochondre during the early stages of enlarged spleen; and sometimes slight pressure over that part causes exquisite pain. Splenitis, or acute inflammation of the peritoneal coat of the spleen, would appear to be a rare disease; it sometimes exists without much enlargement of the organ, and then the symptoms very much resemble pleuritis of the left side; doubtless splenitis is occasionally cured by the antiphlogistic treatment, pursued when pleuritis is supposed to exist. Pain in the left shoulder is rarely present.

The progress of vascular engorgement of the spleen is more or less rapid, according to the injury which the constitution may have suffered from damp climate, and the nature and duration of the fevers which the patient may have recently suffered.

Enlargement of the spleen sometimes appears as an idiopathic disease in children, and in persons of delicate and feeble constitution; and is produced by the combined influence of a damp climate, variable temperature, want of exercise, unsuitable clothing, and insufficient nourishment. During the slow and silent influence of long-continued grief and distress of mind, the secretions generally appear to be perverted, the cutaneous circulation becomes languid, healthy transpiration obstructed, and then we often find enlargement of the spleen take place in Bengal. The disease when dependent on such causes is always difficult to cure. The most part of the cases of vascular engorgement of the spleen in this country follow intermittent and remittent fevers, and tumid spleen, may be stated as the most invariable consequence of acute and debilitating diseases among children of weak constitutions in Bengal. The same sort of enlargement takes place here in the spleen of adults, in consequence of various debilitating diseases, (but more especially after protracted remittent and intermittent fevers,) which we occasionally meet with at all seasons; but they are seen in their worst forms about the latter end of the rains, and commencement of the cold season: just when concentrated exhalation, and considerable diurnal changes of temperature coexist, which repress the action of the skin, and force the circulating fluids on

the internal organs of the body. At that season of the year congestive fevers are frequent, and lamentably fatal, at the low and damp situations in these tropical regions. These fevers prevail not only in the country forming the delta of great rivers; but in the marshy situations at the foot of hills and mountains, where the soil is composed of alluvion and vegetable remains, washed from the neighbouring hills, into situations where there is no drainage, and an imperfect ventilation. The assemblage of constitutional symptoms described in the foregoing pages constitutes *the endemic cachexia of those tropical countries that are subject to paludal exhalations*. The enlargement of the spleen is the most frequent attendant on this cachexia; and its increase, or subsidence, generally corresponds with the unfavourable or favourable changes, which are taking place in the constitution. It is however proper to observe here, that the constitutional symptoms sometimes exist in a very marked degree, where neither enlargement, nor morbid sensibility of the organ itself, are very palpable.

On dissection of subjects in whom disease of the spleen has terminated fatally, we find a considerable variety in the morbid appearances of that organ; which may be described under the following heads—the most frequent diseased appearance being placed first in order.

1. A soft, rounded enlargement of the spleen, the texture less firm than in the healthy state; and easily broken if the finger be pushed abruptly against it. In some cases the part is so much softened, that it resembles a great clot of blood, wrapped in a thin membrane: this varies in colour, from black, to brown or blue; and in the extreme degree of softening, when we attempt to lift the tumid spleen the fingers are thrust through the membrane, and the organ breaks down in the hands, becoming a putrid gore. This soft, globular enlargement from vascular engorgement of the spleen, most commonly attends, or follows, the severe remittent fever of the rains and cold season, when that disease attacks weak and unhealthy young persons.

2. Oblong enlargement of the spleen; the organ being more firm in texture than in its natural state, its edge thin and notched: the colour being sometimes a pale brown, though more generally a dusky red. This morbid change of structure would appear to be the result of more slow and gradual degeneration, which in its earlier stages has probably been attended with some inflammatory condition of the internal structure of the spleen: in such cases we also find evidence of superficial inflammation, attended with adhesions to adjacent parts, more frequently than in the rounded enlargement from simple vascular engorgement.

3. Opaque patches of various sizes, some of these extend over half the convex surface of the spleen, and are nearly $\frac{1}{8}$ th of an inch thick; they may be deemed the result of albuminous depositions during superficial inflammation.

4. Adhesions of the peritoneal coat of the spleen to contiguous vis-

cera ; which adhesions are by no means a general result of tumid spleen in Bengal.

5. In a few old cases, we find a more indurated friable spleen ; that breaks when handled without much force, like a piece of old moist cheese.

6. Still more rare, is the firmer induration intersected with septa of condensed fibrous structure ; to which we give the name of scirrhus.

7. Tubercles of various sizes, generally small, and of grey, or brown colour.

8. An organised coagulum in the splenic vein.

9. Encysted tumours.

10. Abscess of the spleen.

The four last mentioned morbid appearances are exceedingly rare in Bengal.

Besides the above appearances of disease, we sometimes see an uniform pale-white, or milky colour of the peritoneal coat of the spleen ; which tunic is unusually tough, like a thin bladder that had been dried and afterwards wet in hot water : the substance of the spleen being soft and flexible. This has been observed in the post-mortem inspection of several persons who had been long subject to agues. In patients who have suffered from spleen disease, and are destroyed by a purging, numerous small ulcers are found on the internal membrane of the great intestines, while the peritoneal coat appears either quite healthy, or paler than usual : the mesenteric glands in such subjects are often enlarged.

Our treatment of the early stage of enlargement of the spleen must depend much on the nature of the coexistent pyrexia, and the degree of morbid sensibility when pressure is made over the left hypochondrium ; as well as the nature of other acute symptoms that may be present. We would also be much guided by the degree of plethora and general condition of the patient. But mercury must never be used with a view to cure the disease of the spleen.

The treatment found most useful in that modification of enlarged spleen, which consists in vascular engorgement of the organ, is, perseverance in a course of purgative medicines, combined with bitters, and some preparation of iron :* of which, small doses of the sulphas ferri appear to be the most efficacious. My usual formula for cases where there is not much pyrexia is,

R. Pulv. Jalap. — Pulv. Rhei — Pulv. Calumbæ — Pulv. Zinziberis — Potassæ Supertartratis aa ʒi. ; Ferri Sulphatis, ʒss. — Tinct. Sennæ, ʒiv. Aquæ Menthæ Sativæ, ʒ x. misce.

This prescription is called the *spleen mixture*. The dose is one

* The efficacy of preparations of iron in the cure of enlarged spleen, is pointed out by Magnatus, in his *Thesaurus de Materia Medica*, vol. II. page 901, as well as in Pinel's *Nosographie Philosophique*, vol. III. page 547. See also Celsus *de re Medica*, lib. iv. c. i. sect. 5.

ounce and a half for an adult, at 6 A.M. and repeated at 11 A.M. daily. For children, the doses are regulated so as to produce not less than three, and not more than four stools daily. This medicine acts as a purgative, tonic, and diuretic. The purgative properties of the two first articles in this prescription will be assisted by the cream of tartar; while that medicine with the jalap generally act on the kidneys: the principal effects of the other ingredients may be referred to their tonic and astringent properties. The cure of the enlarged spleen may probably be in some measure owing to the effects produced on the circulation in that organ, by the frequent application of a powerful astringent to its immediate vicinity: the natives of this country are decidedly of that opinion; for on administering remedies containing sulphate of iron in spleen disease, the patient is commonly directed to lie on the left side, that the medicine may flow to that part of the stomach in contact with the spleen. I have formerly used the above prescription with treble the proportion of sulph. ferri now directed; and on dissection of some young subjects who came under my care in an advanced and desperate stage of the malady, and who died of the diseased spleen, while taking the mixture with the larger proportion of sulphate of iron, I found the stomach quite white, and exceedingly contracted; more resembling a man's thumb than a young child's stomach. I now consider the smaller quantity of sulph. ferri more proper for ordinary cases; and sometimes add $\mathfrak{z}\text{i}$. of Pulv. Scammon. Comp. to the above mixture, for patients who are very costive and require stronger purgatives. On the other hand, in very delicate and emaciated subjects who are easily purged, it is requisite to substitute compound tincture of cardamoms for the tincture of senna: and if there be any disposition to paroxysms of intermittent fever, I add to the mixture the same quantity of quinine as it contains of sulphate of iron.

When the disease is obstinate, there is an advantage in changing the prescription occasionally; and after the above has been used for 10 days, the patient, if an adult, is directed to take eight grains of compound extract of colocynth, with two grains of camboge, in pills at bed-time; and 20 drops of tinct. ferri muriat. in a wine-glass of water, with $\mathfrak{z}\text{i}$. of tinct. gentian. comp. at 7, and repeated at 11 A.M. These medicines are to be continued for five days, and then, after taking the Spleen Mixture for 10 days more, the patient is ordered to take $\mathfrak{z}\text{ss}$. of the powder of Black Myrobalan, with $\mathfrak{D}\text{ss}$. of Black Salt every morning; and eight grains of compound extract of colocynth, with two grains of sulphate of iron, and two grs. of aloes, in pills at bed-time. Thus, for two-thirds of the time the patient is taking the Spleen Mixture; with the occasional change to another medicine for a short interval, whereby the efficacy of the principal remedy is not weakened by its habitual use. It cannot be of importance to adhere invariably to a precise number of days in using each prescription, but an occasional change is requisite; and at any time during the treatment, if the patient becomes

feverish, the above medicines are omitted, a dose or two of jalap is given, and leeches or V. S. employed. In a few cases we find enlarged spleen attended with cough, and the febrile stage of catarrh, and these cases are better treated for a few days by V. S. or leeches, purgatives, and tepid bath, before we commence the mixture containing sulphas ferri.

As a general plan of treatment for Europeans, those adults subjects who are not much reduced in strength, must be bled from the arm, and have from four to 10 leeches applied over the region of the spleen every 2d day, for a fortnight. Should there be pyrexia, the V. S. may be repeated once or oftener; the blood should always be taken while the patient is in the recumbent posture, and it is seldom requisite to take more than one pound of blood at a time from an adult. In all cases where fever exists, or V. S. is requisite, I have found much benefit from directing a purge of compound powder of jalap; or of scammony with cream of tartar and a grain of camboge; to be repeated for two or three days, before the sulphate of iron was administered in combination with the bitters and purgatives as above directed.

In the treatment of diseases of the spleen, a careful attention to regulate the patient's diet is of the utmost importance. During the continuance of fever, the nature and quantity of food must be directed with reference to the degree of pyrexia and symptoms of local inflammation that may exist. When patients not much reduced in strength are suffering from the early stage of vascular engorgement of the spleen, and having only occasionally slight pyrexia, it is advisable that the medicine should be given twice a day, so as to operate freely three or four times; no meat should then be allowed; they must live on tea, bread, sago, gruel, and chicken broth, or kid soup in very small quantity. But in the more chronic cases, where we must patiently wait for slower changes in the constitution, and the gradual removal of the enlargement of the spleen, the mixture is given once daily, in the morning, and in such doses as to act less powerfully, only twice a day; it is then not inconsistent to allow some roasted or boiled meat, and curry. A small quantity of port wine and water, or beer, is also taken with benefit at dinner time, in most cases where meat can be allowed with propriety.

Natives suffering under the early stage of spleen disease, attended with fever, live on barley-water, sago, bread, and *coee*, or parched rice; but in more chronic forms of the disease, they may with safety be advised to eat their usual curry and rice. It seems generally admitted that milk is improper food for patients labouring under disease of the spleen; and I am now quite satisfied that the prohibition of milk is almost always justifiable. The native practitioners also prevent patients from eating fat, or oil; although castor oil is often administered by them as a purgative, and with great benefit.

Water which has been used for cooling heated iron at a blacksmith's forge has been recommended as an auxiliary to other

remedies employed in the cure of enlarged spleen. I have ordered it in some cases, at the time that purgatives were given, and apparently with benefit. This water is perfectly transparent, and if left exposed to the air for a short time after the iron has been cooled in it, there is scarcely any unpleasant odour or taste. This remedy is mentioned by Celsus.

OBS. XXVIII. — Nussevun, a Mahomedan child, aged 3 years, was brought to me on the 26th June, 1831, suffering from fever of 11 days duration. She was reported to have had an indistinct cold fit every 2d day about noon, but this was not the ordinary day of a paroxysm. The eyes were heavy and watery, the head was hot, belly tumid and elastic, spleen large and rounded, so that it could be distinctly felt two fingers breadth below the cartilages of the left false ribs, and extending half way from the ribs to the umbilicus. The conjunctival linings of the lower palpebræ were pale; the tongue was bloodless, moist, and coated with white mucus, through which the points of small red papillæ were evident; the feet were œdematous: appetite had ceased for several days, and the bowels were costive. Two leeches were applied over the spleen, and \mathfrak{z} i. of compound powder of jalap was administered, which purged the child freely.

June 27th. — Blueness of the nails and coldness of the hand came on at 10 A.M. but no distinct rigor; though the nose and ears were quite cold. Two more leeches were applied to the spleen, and the purgative was repeated as yesterday; it operated well.

June 28th. — The morbid heat of head was much decreased and the belly less tumid, but the size of spleen not altered. One leech was applied to the region of the spleen.

R. Pulv. Jalap.; Pulv. Rhei.; Pulv. Zinzib.; Pulv. Calumbæ; Potassæ Supertart. aa \mathfrak{z} ss.; Ferri Sulphatis gr. v.; Tinct. Sennæ \mathfrak{z} i.; Aquæ Menth. Pip. \mathfrak{z} v.; misce. Half an ounce administered every morning.

June 29th. — No return of coldness recurred this day.

One leech applied to the left side; mixture repeated daily.

July 3d. — Is purged three or four times daily; spleen smaller; œdema of feet removed; tongue less coated with mucus.

A dose of Castor Oil was given this day; and the mixture repeated daily, afterwards.

July 8th. — Enlargement of spleen very nearly subsided, appearance of health restored and appetite good; she was freely purged by a dose of compound jalap powder this day, and the mixture was ordered to be repeated daily.

July 14th. — Well. Medicine omitted.

This child was the daughter of one of my own servants. The leeches were applied in my house, and I know the medicine was faithfully administered.

OBS. XXIX. — Bannon, æt 26, a middle-sized man, of dark complexion, was received into General Hospital on the 19th December, 1825. He had been ill above six weeks at Arracan, and was now landed on arrival from that place; his illness had been at first

continued fever, but for the last 18 days a quotidian intermittent. On admission his countenance was sallow and bloated; he complained of oppression at the chest, and cough; the tongue was clean and moist, bowels said to be regular; he was now suffering from a constant state of pyrexia, and much debility. The spleen was large, rounded, and extending far below the cartilages of the left false ribs.

Apply 10 leeches to the left hypochondre, and let him have a tepid bath afterwards.

Two ounces of the Spleen Mixture, such as prescribed at page 299, ordered to be taken three times a day; and ten drops of Liquor Arsenicalis were mixed with the first dose, daily.

December 24th.—The paroxysms of intermittent fever have ceased. He is sufficiently purged by the medicine. The arsenical solution was now omitted, but the Spleen Mixture was continued daily.

January 2d, 1826.—He has been purged five times daily; the enlargement of the spleen has subsided; he is still suffering from some oppression at the chest, and complains much of debility.

R. Decoct. Cinchonæ, ℥i.; Sodæ Sulphatis, ℥i.; misce. Ordered to take one ounce three times a day.

Jan. 10th.—His bowels have been kept freely open by the above medicine, and his health is improved. Discharged.

I had an account of this man 16 months after he left hospital, and find that he had enjoyed tolerable health with the exception of dyspnœa, which troubled him sometimes.

OBS. XXX.—John O'Brien, a stout boy, three years of age, was taken ill with fever on the 30th September, 1826, and has had a paroxysm every second day since; but there has been no rigor. Admitted into General Hospital on the evening of the 10th October, 1826. The spleen is very large and round, extending as low down as the navel; there is morbid sensibility on pressure being made over the left hypochondre; the skin is dry, and face pale. He had a paroxysm of fever this day, and has taken medicine in the morning, which has had no effect.

Enema Purg. statim.

October 11th.—He had two stools after the enema, and is now free from pyrexia.

R. Quininæ Sulphatis, gr. iv.; Aquæ Menthæ Pip. ℥iss.; Acid Sulphuric. Dilut. gtt. vi.; misce. Three drachms to be given, four times a day.

Oct. 12th.—He slept well, and his bowels were sufficiently moved by the enema. Quinine repeated; and in the afternoon he had one dose of six drachms of the Spleen Mixture mentioned at page 299, which did not purge him; therefore the same dose was given at 7 A.M. and repeated at 11 o'clock A.M. daily. By these means he was freely purged, and the enlargement of the spleen quickly subsided. He had no return of fever after the 12th, and was discharged well on the 19th October. The tumefaction

of the spleen having entirely subsided, and the child had a healthy appearance.

This child had resided in a house overlooking the broad ditch of Fort William, and his illness was ascribed to a noxious exhalation from the mud of the wet ditch, from which the water had been allowed to run off at the usual time of the year, and this patient was taken ill a few days afterwards. On recovery, O'Brien returned to the same residence, and was attacked on the 2d November with tertian intermittent; the cold stage of which was severe, followed by a prolonged hot fit. The child had a pallid countenance when the hot stage of ague was not actually present. The bowels had been allowed to become costive, and the enlargement of the spleen had again appeared. He was re-admitted into hospital on the 4th November, 1826, in the evening. Active purgatives of compound powder of jalap and rhubarb were administered, and he took the spleen mixture in the dose of one ounce once every day, and had one dose of two grains of quinine after coming to Hospital. He had a paroxysm of ague on the 6th, and another on the 15th November: but there was some degree of pyrexia almost constantly present for the first ten days.

He was discharged well on the 27th November. I had frequent opportunities of seeing this boy for 4 years afterwards, and know that he became a robust active fellow, and his health during that period was always good; his parents have removed to the Upper Provinces, and I have heard that he had no return of the disease since he left this place.

It is surprising to observe how quickly a very considerable enlargement of the spleen will take place during the progress of intermittent and remittent fevers in the lower provinces of Bengal: this child had been only ill 12 days, when first admitted into Hospital with the great tumefaction of spleen above described. Enlargement and softening of the spleen may take place in a very short period, and without any previous febrile disease; the most remarkable instances of which are those reported in the cases of the epileptic patients who died at Paris from a large quantity of prussic acid given by mistake. These unfortunate persons died in a few hours after taking the acid; and on their dissection the spleen was found gorged with blood, soft, and pultaceous.

OBS. XXXI. — On the 5th December, 1830, I was consulted by a lady who had come to Calcutta, from above Rajmahal. She was emaciated and pale, there was a livid circle round the eyelids, and the conjunctivæ were pale and bloodless: her skin was dry and cool, the feet slightly œdematous; tongue white and moist, but nearly clean: pulse 94, soft and weak. The spleen was enlarged, being nearly the size of a child's head, round, and very moveable, and rather lower down than a level with the umbilicus; it was very painful if pressed. The bowels were habitually costive. She was in the 5th month of her third pregnancy: and said that on the 9th November she had been attacked with slight fever,

which at first appeared little more than a common cold, but after it had continued for 10 days she found herself very drowsy and torpid during the whole forenoon of every 2d day, at the same time that she had slight headache, coldness of the feet and hands, pains in the palms, and blueness of the nails, but never any actual shivering; these ailments had been followed about noon by flushed face, watery eyes, and extreme thirst. On the alternate days she was tolerably well, but had no appetite, and found herself becoming progressively weaker and lower.

Ordered to apply four leeches over the region of the spleen.

R. Infus. Gentian. Comp.; Infus. Sennæ, aa \mathfrak{z} iv.; Magnesiæ Sulphat. \mathfrak{z} i.; Quininæ Sulphat. gr. viii.; Acid. Sulph. Aromat. \mathfrak{z} ss.; Tinct. Sennæ \mathfrak{z} ii. misce. A wine-glassful to be taken immediately, and repeated at 6 A.M. daily.

December 6th. — At 10 A.M. her hands are cold, the nails blue, pulse 118; there is anxiety and hurried respiration, but no rigor. She was purged twice freely yesterday, and took a dose of the mixture at 6 this morning, which has operated scantily; the stools are of a dark-grey colour, and watery.

Four leeches repeated over the region of the spleen.

Dec. 7th. — She feels comparatively well this day; had scarcely any pyrexia after the coldness yesterday, and is much better; but is miserably thin and weak; the spleen not decreased.

The remainder of the mixture was taken this morning, and has purged her twice very freely.

Apply two leeches over the spleen.

Dec. 8th. — No chilliness this forenoon, and she thinks herself better; morbid sensibility of the spleen much decreased, and the tumefaction is rather smaller.

R. Pulv. Jalap.; Pulv. Rhei.; Pulv. Calumbæ; Pulv. Zinzib.; Potassæ Supertart, aa \mathfrak{z} i.; Ferri Sulphatis — Quininæ Sulphat. aa \mathfrak{z} ss.; Tinct. Sennæ \mathfrak{z} i. Aquæ Anethi \mathfrak{z} x. misce. Two table-spoonsful to be taken every morning early.

Dec. 22d. — The above mixture has been continued daily, with the effect of operating on the bowels twice a day. The tumefaction of the spleen has entirely subsided, and her health and strength are very much improved. There has been no return of coldness or fever since the last report, and her appetite is increased.

R. Pil. Rhei. Comp. — Extract Colocynth. Comp. aa \mathfrak{z} ss.; Olei Menthæ Sativæ, gtt. v. misce et divide in pil. No. x. Two pills to be taken every night at bed-time. — R. Quininæ Sulphatis \mathfrak{z} ss.; Aquæ Fontis, \mathfrak{z} x.; Acid. Sulph. Aromat. \mathfrak{z} ss.; Tinct. Cardamom. Comp. \mathfrak{z} ii. misce. — Two table-spoonsful at 11 o'clock in the forenoon, every day.

January 10th. — No complaint, except that a slight degree of debility remains; there is a return of circulation of red blood in the capillary vessels of the conjunctivæ, and the leucophlegmatic pallor of visage has subsided. Bowels rather too free.

R. Decoct. Cinchonæ ℥j.; Tinct. Cinchonæ Comp. ℥ii.; Acid Sulphuric. Aromat. ℥iiss. misce. A wine-glassful to be taken at 7 A.M. and at 12 daily.

This patient recovered excellent health.

OBS. XXXII.—Sperry, æt. 38. Returned from Arracan, and was admitted into General Hospital on the 15th December, 1825. He states that he was at Arracan for eight months, during seven of which he suffered from an intermittent fever that returned every second day. The bowels are now costive, the spleen enormously enlarged, and he is much debilitated.

Capiat Liquor. Arsenicalis gtt. x. bis quotidie.—R. Extract. Colocynth. Comp. gr. viii.; Pulv. Ipecacuanhæ—Camphoræ, āā gr. i. misce fiant pil. ii. quotidie mane sumendæ.

December 21st.—He has a return of ague daily; the left hypochondre is very tense. The above medicine was now omitted, and Spleen Mixture given daily, at 7, 11, and 2 o'clock: the Liquor Arsenicalis gtt. xv. at bed-time.

January 2d, 1826.—The enlargement of the spleen has entirely subsided. Ague has ceased; bowels free, tongue clean, and there is now no complaint except debility. Discharged.

As soon as the purgative mixture, with sulphate of iron, acted freely on the bowels, the swelling of spleen subsided, and the ague ceased.

I had an account of this man's condition 16 months after he left the Hospital. His health was then tolerably good, and he had suffered only one attack of ague with pain in his left side.

Probably change of air was of much service to this man, who had returned from the unhealthy climate of Arracan. But I have sometimes seen enlargements of the spleen which occurred here quickly subside under the use of the Spleen Mixture without any change of air. About 20 days appears to be the usual period required for the subsidence of recent vascular engorgement of the spleen in young subjects, under the most steady system of treatment, in those cases where mercury has not been administered; and where the early and febrile stage of the disease has not been aggravated by undue employment of stimuli. On the other hand, the chronic induration of the spleen is removed with the greatest difficulty, and many of the older cases are hardly to be cured by persistence in the best remedies.

CHRONIC ENLARGEMENT OF THE SPLEEN.

When enlargement of the spleen has existed for several months, the tumour becomes more indurated; it is less changeable in its bulk in the course of a few days, and not so quickly affected by remedies as the recent stage of vascular engorgement of that organ is. The size of the chronic enlargement of the spleen varies: in the adult it frequently is found to weigh five pounds. In children it often fills the space from the left hypochondrium quite up to the

umbilicus, and sometimes extends to the right of the navel, reaching in length down half way, or even the whole distance to the pelvis. When a case of this sort has existed half a year, and the patient not being much emaciated, recovers on using medicine in three or four months, it may be deemed a fortunate result of the most careful treatment. And when a spleen of this enormous size is completely cured, relapses are very rare; which is not the case in the early stage of vascular engorgement of the spleen; for then the local enlargement is apt to return on any slight indisposition. If the tumid spleen be of a globular shape, an enormous degree of disease may generally be cured by perseverance in careful treatment; but if the enlarged spleen be of an oblong shape, with a thin, sharp edge, deeply indented by notches which can be felt through the abdominal parietes, a cure is much more difficult, and cannot generally be expected.

Indistinct agues are apt to attend this chronic form of the disease, and the patients often have œdema of the feet and hands. If severe diarrhœa or dysentery take place during the existence of chronic induration of the spleen in emaciated patients, they very rarely recover.

In the commencement of the treatment of chronic diseases of the spleen, we derive great benefit from applying leeches daily, or every second day, to the left hypochondrium. The recovery of chronic cases is very often delayed on account of omitting to apply leeches in sufficient number at first. With local depletion, patients must persist in a moderate course of purgatives, and some preparation of iron; at the same time that they are enjoined to use a spare diet, with only a small quantity of meat, or fried fish, and to take some vinegar or pickles with dinner.*

Blisters or issues over the region of the spleen are of service; but we should be careful of applying them to emaciated, leucophlegmatic, or dropsical subjects, during the rainy season; as sloughing ulcers are then liable to be excited by them. Much benefit is derived from a flannel bandage, or broad belt of flannel applied moderately tight, so as to support the weight of the spleen; and it is important that the whole belly, but especially the left side, should be rubbed for an hour twice a day with heated flannel; if there be an open issue, the side may be rubbed round that. Liniments are not of much use.

OBS. XXXIII. — John Brown, æt. 7, a delicate child, of light complexion and active habits, born in Bengal of European parents, was placed under my care on the 20th November, 1828: he was suffering from general ill health, and a swelling in the left side of the belly. The spleen filled the whole left hypochondre, and extended laterally quite to the navel; its lower extremity reached

* Pickled capars eaten daily with the food were considered of use in preventing spleen disease in the time of Pliny. Vide C. Plinii Naturalis Historiæ, lib. 20. cap. 15.

half way from the umbilicus to the pubis: it could be plainly seen when the child was laid on his back. The tumour was rounded, hard, firmly fixed in its place, and painful on pressure. The conjunctivæ of the lower lids were pale and bloodless, the face sallow, extremities wasted, the abdomen tense and very protuberant anteriorly; the appetite was indifferent, and the child suffered from irregular returns of fever, the exacerbation generally in the afternoon; he never experienced any distinct rigor. The pulse was usually 82 and weak, but during an attack of fever it was seldom less than 124. The bowels were regular and the urine high-coloured. I was informed that this child was first taken ill with fever in October, 1826; he had then a tedious illness and imperfect recovery. During his convalescence the enlargement of the spleen was discovered, and he had not recovered good health from that time, the tumefaction of the spleen never having subsided.

The child was directed to be dressed in flannel, ordered to eat no meat, and to take only a small quantity of soup for dinner. Five leeches were applied over the region of the spleen every 3d day, he had two table-spoonfuls of the spleen mixture every morning early, and half a grain of sulphate of quinine in solution every day at 11 o'clock in the forenoon: a dose of castor oil was given early on the morning of the day previous to using the leeches. By these means he was freely purged, and the irregular returns of fever were prevented.

December 5th. — The spleen is not materially altered in size, but it is softer; the child is rather weaker: it was impossible that his face could be paler than when he first came under my care.

The leeches were continued every 3d day. The castor oil and quinine were omitted: a large table-spoonful of the spleen mixture was given every morning early and repeated at noon, by which he was usually purged four times a day. The same diet was continued, and a very small quantity of vegetable curry with rice and toasted bread allowed for dinner.

Dec. 20th. — Spleen much decreased in size, the child has become very fretful, and many of the last leech-bites have inflamed and are suppurating. The medicine has usually produced three or four free stools daily; the appetite has improved. One table-spoonful of the spleen mixture is to be now given every morning, and his diet increased by allowing some roasted or broiled chicken every 2d day, alternately with a kid or fish-curry; and vinegar is offered with his food whenever he will take it. Half a glass of port wine is now given, diluted with twice the quantity of water daily with his dinner.

January 12th, 1829. — He has usually two free stools daily. Health much improved, the leech-bites have all healed, and the size of the spleen is decreasing slowly. The whole of the abdomen and back ordered to be rubbed with a heated flannel for an hour night and morning, daily.

Mixture continued.

February 10th. — The spleen is decreasing in size daily, and his health is much improved. The spleen mixture given every second morning.

March 2d. — No enlargement of the spleen can now be discovered by the most careful examination. The child has become stout and fat, and has a healthy complexion. His general health has very rapidly improved since the middle of February, when the weather began to be warmer. Medicine omitted.

December 6th, 1831. — The health has been completely restored, and he is now the most active and healthy boy in Calcutta.

OBS. XXXIV. — Peter Crawley, aged 7 years, was brought to me on the 19th November, 1830, for advice, on account of an illness with which he had been afflicted for six months, during which time he had suffered from frequent attacks of fever, and he was gradually wasting away. I found him pale and emaciated, the feet slightly œdematous, the conjunctivæ pale and bloodless, his face sallow and bloated, and there was a livid circle round the eyes. Tongue slightly coated with white mucus, and so pale and bloodless as to resemble a piece of macerated veal; his gums were livid, pulse 116; there was some morbid heat of skin continually present, but he had usually an exacerbation of fever in the evening not preceded by rigor. The spleen was large, hard, rounded, and heavy, not at all moveable; it filled the whole left hypochondre, and extended more than a finger's breadth to the right of the umbilicus; its lower extremity, when he stood up, was felt three finger's breadth lower than the level of the navel, in fact it reached nearly to the pelvis. Diet restricted to tea, bread, sago and arrow-root.

Four leeches were applied over the enlarged spleen, every third day, for five times.

He was ordered to take every morning a table-spoonful of the spleen mixture with quinine; some of the following ointment was rubbed over the abdomen daily, and when the leeches were no longer used, it was applied more particularly over the enlargement of the spleen:

R. Camphoræ \mathfrak{z} i. — Spirit. Rectificati \mathfrak{z} ss.; Cerat. Cetacei \mathfrak{z} v. — Olei Terebinth. \mathfrak{z} ii. — misce.

February 18th, 1831. — The above medicines have been continued daily. He had no fever after the second application of the leeches, and the spleen is decreased at least one-third. He has now an attack of continued fever which commenced yesterday without any evident cause. There is a great degree of morbid heat, with some cough and shortness of breath. Former treatment omitted.

Eight leeches applied over the spleen. — R. Pulv. Jalap. Comp. \mathfrak{z} ss.; Pulv. Scammon. Comp. (Ph. Ed.) gr. xii. — misce. Mitte tales chart. x. One powder at 6 A.M. daily; and repeated at noon, if not freely purged.

Feb. 19th. — He was well purged by the second powder; the pyrexia is somewhat abated.

Apply six leeches over the region of the spleen. — Powders repeated as yesterday.

Feb. 20th. — Purged freely, and very little pyrexia now remains. Powders repeated daily.

Feb. 22d. — He is free from fever; the spleen is very slowly decreasing; he is pale and weak. Ordered to take two table-spoonsful of the spleen mixture with quinine every morning. Allowed chicken curry, or broiled kid, with pickles and vinegar at dinner.

March 8th. — Health considerably improved, and the spleen is slowly decreasing.

A blister two inches square applied over the spleen, and kept open. — Medicines continued daily.

March 23d. — The spleen continues to decrease slowly, and his health is somewhat improved; but he suffers from occasional vertigo, and has a headache almost every forenoon, which is ascribed to the quinine. The spleen mixture ordered without quinine, two table-spoonsful to be taken every morning.

April 13th. — The headaches ceased on omission of the quinine. There has been no change in any respect during the last 20 days. Half a glass of port wine given daily at dinner time. Former treatment omitted.

R. Tinct. Ferri Muriatis; Tinct. Gentian. Comp. āā ʒi. misce. To take forty drops in a small wine-glassful of water daily at 6 A.M. and repeat at noon.

R. Scammon. Gunmi-resinæ; Extract. Colocynth. Comp. āā ʒi.; Saponis Duri. — Cambogiæ āā ʒss. — misce, et divide in Pil. No. xxx. — one Pill every night at bed-time.

May 4th. — Progressive and satisfactory improvement in the decrease of the spleen; health and general appearance somewhat mended, his appetite is good. Above treatment continued daily.

May 22d. — There is no evident change in the last ten days; a scabby eruption has appeared all over the head. Former medicine omitted, and he is ordered to take a powder composed of black salt 10 grains, and the powder of the small black myrobalan* 20 grains, every morning early in a wine-glass of water.

June 6th. — The above medicine has generally produced two

*The black myrobalan is known in the Bazars by the name of *Junghieia Haritakee*, or *Zungi Hur*. It is the small, black, withered and dried, half-grown fruit of the *Terminalia Chebula*; it is a mild and rather warm purgative, which is tolerably certain in its effects as an aperient, and possesses very considerable tonic properties. It has been found useful in some chronic visceral diseases attended with debility, where mercury did not act favourably. This article of *Materia Medica* is mentioned in Pomet's work on drugs, but the accounts there given of the different varieties of myrobalan are somewhat erroneous. It is surprising that a medicine with such useful properties should be so little used in many of the cachexiæ that prevail in low and damp situations in Europe. One ounce of the black salt, or *Kala Nemuk*, of the Bazars, according to the analysis made by Accum in London, is composed of, — 6 grains of black Oxyde of Iron; 14 grains of Sulphur; 12 grains Muriate of Lime; 444 grains Muriate of Soda; and there was a loss of four grains. — See Asiatic Researches, vol. xi. page 193.

or three stools daily, his health and appearance are improving, and the spleen has decreased somewhat in the last fortnight. Eruption on the scalp better. Treatment continued daily.

July 10th. — He continues to improve slowly, the powders purge him rather more than at first, eruption over the scalp better. Powders omitted, he is directed to take ℥i. of iron filings in a teaspoonful of common oil of mustard seed every morning, and a teaspoonful of the tincture of aloes and garlic mixed with three teaspoonsful of water, to be drank immediately after the former medicine; a dose of castor oil was given every Monday morning, omitting the other medicines for that one day each week.

Sept. 22d. — The above remedies have had a remarkably good effect, the child's health is much improved in every respect, the spleen is rapidly decreasing, but it can still be felt under the cartilages of the left false ribs; it is round, moveable, and not pained by any pressure.

The same treatment was continued, and the enlargement of spleen disappeared entirely. He had a slight attack of fever on the 12th November, 1831, for which he took infusion of senna and quinine for four days, and got well. He is now a fine healthy boy, residing in Calcutta, and can be seen at any time.

OBS. XXXV. — A tall and delicate woman, of dark complexion, 22 years of age, was brought to me for advice on the 16th December, 1828, on account of a tumid spleen that was half as large as her own head. The disease was first observed in the beginning of November, and was very large when first noticed; it had not been preceded by fever or any other ailment, except that she had been remarkably weak and languid during the rainy season, more especially since the beginning of August; for the last 14 days her health declined more rapidly, and she has restless nights. On examination the spleen is found rounded and very protuberant anteriorly, it extends two fingers' breadth to the right of navel, and reaches half way from the cartilages of the left ribs to the pelvis, as she lies in the horizontal position: from its enormous bulk the tumour is not easily moveable. The conjunctivæ of the lower eyelids are pale and bloodless, tongue white, clean, and blanched like macerated flesh. Pulse, when in the recumbent posture 92, soft and weak; when she is standing up 112; the extremities are cold and appetite indifferent. The bowels are prone to constipation. This patient is the mother of one child, which is now nearly five months old, and she has been unable to nurse it. The catamenia are regular but scanty, and there is no other favourable symptom, for a more pale, ghastly and leucophlegmatic visage, or more exhausted general aspect never was seen.

She was directed to live on a small quantity of good soup, with a little broiled mutton for dinner, and to use only tea and bread with sago night and morning. Three table-spoonsful of the spleen mixture were ordered to be taken very early in the morning, with the intention that it should purge twice freely in the forenoon, and

not interfere with the digestion of a sparing dinner of animal food at 3 o'clock.

For the purpose of unloading the turgid spleen, and at the same time of not arresting the feeble remains of regular menstruation, four leeches were ordered to be applied over the region of the spleen every second day for four times each month, commencing their application on the second day after the menstrual period was over, so that for the ten days prior to the menstrual period no leeches were applied. The medicine was also omitted during menstruation. The whole of the abdomen where leeches did not bite was rubbed daily with hot flannel, and the patient was directed to wear an entire dress of flannel next the skin besides her usual clothes.

February 20th, 1829. — The mixture has occasionally increased or decreased a little, so as to purge twice freely in the early part of the day. The spleen has decreased very considerably, but there is not much improvement in the general health. The mixture was now taken with exceeding difficulty and reluctance, often causing nausea, therefore it was omitted. The leeches were ordered to be continued for four times in each month as above directed, and she was allowed more meat and two glasses of port wine daily.

R. Scammon. Gummi-resinæ, Extract. Colocynth. Comp. ââ ʒi. ; Saponis Duri — Cambogiæ ââ ʒss. — misce, et divide in Pil. No. xxx. — Two Pills to be taken every night at bed-time.

R. Tinct. Ferri Murialis ʒii. Twenty drops to be taken in a wine-glassful of water at 6 A.M. and repeated at noon every day.

June 10th. — The same treatment prescribed in February has been continued without intermission; except during the flow of the menses. The pills produce regularly two copious stools every day, early in the forenoon; and sometimes one or two scanty stools afterwards. The spleen has slowly decreased, and is now not a quarter the size it was in December last: the health decidedly improved. Some of the leech bites have inflamed, and are suppurating. The leeches were discontinued; the pills and tinctura ferri continued.

October 6th. — The decrease of the spleen has been very slow since June, but the tumour has now entirely disappeared; and the patient's health has become in a great measure re-established, although this is the most distressing month in the year for weak persons.

March 6th, 1831. — I have this day examined the patient, and cannot discover the slightest vestige of enlargement of the spleen. Her health for the last 18 months has been as good as at any period of her life.

OBS. XXXVI. — On the 9th December, 1827, I was called to see a patient who had just arrived from the Upper Provinces, and found him labouring under an enormous enlargement of the spleen; which nearly filled the left side of the belly; it was tense, hard and fixed, heaving up the cartilages of the ribs on the left side; ex-

tending laterally quite to the umbilicus, and horizontally 3 fingers' breadth below the navel. The whole belly was tumid, and tense; respiration hurried by slight exertion. The pulse was 88, soft, and oppressed, appetite tolerable, bowels regular. There was a slight serous oozing from a small ulcerated aperture, above and a little to the left of the umbilicus: round which aperture the muscles and integuments were indurated to a considerable extent. The movement of a palankeen, or any attempt to take exercise, caused pain in the spleen. Though his face was pale and sallow, and the conjunctivæ of the lower lids bloodless, his constitution did not appear much impaired; his muscles being tolerably firm, and not much reduced in size. This man had led an active and temperate life, as a mounted officer at one of the most healthy stations in the Upper Provinces of Bengal. The account of this patient's illness which was sent with him stated that an enlargement of the spleen had been first observed in March, 1826; and could not be ascribed to any particular cause: at first it was neither very painful nor accompanied with much pyrexia. The swelling gradually increased, and in the months of August and September, 1827, was attended with high fever and extreme pain; suppuration then took place, and the ulcerated opening near the navel formed: after which the distressing pain and pyrexia abated, but the tumour of the spleen was not remarkably decreased. The discharge was described as a serous fluid, with flakes of lymph dreadfully offensive; and it appeared to me to have proceeded from the interstices of the muscles and not from suppuration in the spleen itself. Before coming to Calcutta he had been treated by purgatives and a small quantity of mercury.

The whole belly was rubbed daily with a liniment composed of Cajeputi Oil, — Aromatic Spirit of Ammonia, — Oil of Turpentine, each 1 oz. mixed with 3 oz. of Anodyne Liniment. A small portion of blistering ointment was occasionally inserted into the orifice of the sinus, with a view to keep up a continued discharge.

- R. Pulv. Rhei — Ferri Tartarizati ãã gr. xii. Pulv. Zinziberis gr. v. misce, — to be taken every morning early.
- R. Acid. Nitric. ℥ss.; Aquæ Fontis — Misturæ Camphoræ ãã ℥iv.; Tinct. Gentianæ Comp. ℥ii. misce, — a wine-glassful to be drank every two hours, until the whole is used; beginning four hours after the powder.
- R. Aloes Extract. ℥iijss.; Ferri Sulphatis ℥ss. misce, et divide in Pil. No. xx. Two pills every night at bed-time, if he have not had three stools in the course of the day.

December 28th. — The size of spleen decreased at least one-third; general tension of belly much diminished, and cartilages of the left lower ribs less heaved up than formerly; exercise is less painful, and he can now bear to ride in the buggy, without much uneasiness.

Powders and pills continued. The acid is omitted, and he is directed to take a claret-glassful of weak infusion of sage twice a day.

February 22d, 1828. — The spleen has continued to subside

slowly, and the belly is softer; the tumefaction at the left side is somewhat less than half the bulk it was in the beginning of December; exercise is now borne with hardly any pain, and his appearance is improved, but the appetite is uncertain and not good; extremities usually cold; no pyrexia.

Former medicines omitted. — R. Decoct. Cinchonæ ℥i., Magnesiae Sulphatis ℥i., Tinct. Gentian. Comp. ℥ii. — misce. A wine-glassful to be taken every morning.

R. Decoct. Aloes Comp. ℥i.; Tinct. Ferri Muriat. ℥ii. — misce. A wine-glassful to be taken every night at bed-time.

March 17th. — Very slow decrease of the spleen has continued since last report; the tumour is now less than one-third what it was on his arrival in Calcutta. He was advised to go a voyage to sea; during which he took daily some rhubarb and salpolychrest, with Calunba powder in the mornings; and when the bowels were not sufficiently free, a pill was taken at bed-time, composed of one grain of camboge, with two of colocynth, and two of scammony.

After a little more than a year I had an opportunity of again examining this patient's side, on his arrival from sea; and could not discover any remains of the enlarged spleen. His general health was very much improved, but not so good as it was before the enlargement of the spleen commenced.

A more extended experience in the treatment of the diseases of the spleen, since the above case occurred, induces me to consider that notwithstanding the abscess in the side and the late period of the disease when the patient came under my care, it would have been better to have bled this patient from the arm once, to have applied six or eight leeches over the spleen every second day, for a fortnight: and to have given for the first six weeks the Spleen Mixture; which might then have been followed by the rhubarb and ferri tartar in the mornings, and nitric acid during the day, with greater benefit. I have never yet met with an abscess in the spleen in Bengal.*

During the existence of diseases of the spleen, attended with much enlargement of that organ, hemorrhages from the nose, lungs, or stomach, are very liable to occur: when moderate they almost always afford relief; and in many cases recovery takes place so soon after their repeated returns, that there is reason to ascribe the cure to the bleeding. In young females who are affected with tumid spleen just before puberty, the solution of that disease is very frequently preceded by bleeding from the nose. These facts coincide with the benefit generally derived from the repeated abstraction of a moderate quantity of blood, even in advanced stages of the disease; though there be no pyrexia present, and little or no morbid sensibility on pressing over the enlarged spleen. In adult

* In Andral's Clinique, vol. iv. p. 650. *Obs.* 30, is an instance of a tumour near the spleen, seated exterior to the peritoneum, the size of two large oranges, containing a sero-purulent fluid. I consider it somewhat similar to the above case.

females, with whom any degree of menstruation remains, we should be careful to apply leeches or take blood at such times as shall not interfere with the periodical return, abstracting blood after the regular period is over, as was done in Obs. XXXV.

Spontaneous hemorrhages, if very profuse, sometimes suddenly destroy life, though they frequently appear to be the sole cause of restoration to health in patients with whom all remedies have for a long time failed to afford any relief.

OBS. XXXVII. — In July, 1828, I was requested to see a child, aged three years and half, who had been in a weak and languid state for nearly a month, in consequence of a slight attack of fever. The spleen was enlarged, extending below the cartilages of the ribs, but it was not very protuberant anteriorly; the paleness, debility, want of red blood in the capillary system generally, and other constitutional symptoms were strongly marked. This child had not been exposed in any unhealthy situation; on the contrary, he had lived in an upper-roomed house, with all the comfort and care which opulence could command, and no cause could be assigned for the origin of the spleen disease except the previous fever, and the influence of the Bengal climate.

Before the enlargement of the spleen was discovered, a small quantity of calomel had been used with other purgatives, and from observing the injury generally produced by mercury in such cases, I do not hesitate to ascribe the protracted illness of this child, in great measure, to the calomel that was used when the enlargement of the spleen was in an incipient state.

The patient was now treated for two months with the usual spleen remedies without success: as he appeared to be very weak, leeches were not applied. He had frequent paroxysms of fever, his health continued to decline, and when sent on board ship in October, he was reduced to a very low state of emaciation and debility; the enlargement of the spleen had not been diminished by the remedies employed. I afterwards ascertained that during the voyage to England there was some improvement of health, and slight decrease of the spleen; but on arrival in Europe the child got worse and sunk into a state of extreme debility. I was informed that he was for some time treated without avail by professional men of the highest reputation; he continued to decline in strength and appearance; the belly became very tumid, and the spleen larger than ever; his lips were covered with a dry brown scab, and the respiration was much oppressed. His disease was considered by his friends beyond the reach of medicine, and in despair of recovery all treatment was abandoned, except rubbing the belly with hot flannel, which was continued because it seemed comfortable. The slow decline was progressive until a spontaneous bleeding at the nose took place, and returned for several days to such degree that life was considered in great danger from the loss of blood. The first favourable change observed was a greater freedom of respiration, and notwithstanding the extreme de-

bility, there was increased playfulness, and in a few days improved appetite. From this time he gradually improved, and in four months was restored to good health; without any medicine except an occasional aperient of rhubarb or castor oil, when costive.

OBS. XXXVIII. — Thomas Brooks, æt. 46, a tall and rather thin man, of dark complexion, 14 years resident in India; is on his way to Europe, being lately invalided on account of chronic disease of the spleen and general ill-health. He is now sent to Hospital on the 11th January, 1831, ailing from the remote effects of drunkenness. He states that he suffered from fever and ague at Rangoon in 1826, and the spleen then became enlarged, ever since which period he has been subject to that disease; never having been free from the induration and fulness under the left false ribs, which has been attended with a sense of weight, and so much uneasiness as to prevent his standing quite erect since he left Rangoon; he is of a costive habit.

R. Pulv. Folior. Sennæ \mathfrak{z} i. at 7 A.M.

January 13th. — Was purged four times by the senna. He is now slightly feverish; the spleen is hard and round, extending two fingers' breadth below the cartilages of the left false ribs. Ordered to take a dose of castor oil.

Jan. 14th. — Purged freely by the oil: and does not complain of any particular ailment, except enlargement of the spleen and inability to stand erect. Senna powder repeated.

He was purged by the senna in the forenoon, and at 3 P.M. was seized with a vomiting of black blood, in coagula; the whole quantity estimated at above three and a half pints; he became pale, and faint; the pulse 64, soft, and weak; and the tension at the left hypochondre at once subsided.

R. Magnesiæ Sulphatis \mathfrak{z} iii.; Aquæ Fontis \mathfrak{z} ii.; Acid Sulph. Dilut. gtt. xii. misce. To be taken at 3 P.M. and repeated at 6.

Jan. 15th. — He has been restless and uneasy all night, and has had many stools, consisting of broken coagula mixed with fluid blood; the evacuations altogether are equal to five pints; he is pale and weak.

R. Olei Ricini \mathfrak{z} i. at 7 A.M.

Jan. 16th. — Has had nine stools in 24 hours, in all about $3\frac{1}{2}$ pints, the same sort of evacuations as yesterday, but more fluid.

R. Magnesiæ Sulphatis \mathfrak{z} ii. — Aquæ Fontis \mathfrak{z} ii.; Acid Sulph. Dilut. gtt. xii. misce. To be taken at 7 A.M.

Jan. 17th. — Only two stools in 24 hours, the first contained blood. He seems less debilitated.

R. Pulv. Jalap. Comp. \mathfrak{z} ss. at 7 A.M.

Jan. 18th. — Purged four times by the jalap; there is no blood in the stools; he feels well, but weak. Jalap repeated.

Jan. 19th. — The tumefaction of the spleen has entirely subsided, and he is able to stand erect better than at any time since 1826. He was directed to take Pil. Rhei. Comp. gr. xii. daily.

Discharged to embark for Europe, on the 21st January, 1831.

OBS. XXXIX. — Denis Cahill, æt. 40, a tall thin man, of light complexion, emaciated habit, and broken constitution; 17 years in India. Admitted into Hospital on the 8th March, 1827, with enlarged spleen, attended by pain and sense of weight at the left hypochondre and in the left shoulder blade, extending from thence round the loins. The belly is so elastic, tense, and full, that the dimensions of the enlarged spleen are not very distinctly defined. He is emaciated and pale, with bloodless lips and dry skin; usually of a costive habit, but has suffered much from diarrhoea for a week before he came to Hospital: evacuations copious, quite fluid, of grey colour, and extremely offensive.

The most distressing symptom was the diarrhoea, which defied all remedies; he became weaker, the tension of belly increased, and in the beginning of June ascites appeared. By the use of a weak solution of acetate of potass with acet. colchici, and sp. æther. nitrici, the hydropic tension of the belly was beginning to decrease, without material amendment of other symptoms. On the 22d June, at 10 o'clock A.M. he was suddenly seized with hæmatemesis; not less than two pints of dark-coloured blood was vomited, which was not coagulated. He immediately felt the left side easier than usual. Eight leeches were applied to the left hypochondre. At 7 P.M. he began to void blood per anum, and during the night he was ten times at stool. The evacuations amounted to near four pints of pure blood, no part of which was coagulated. On the 23d June the belly was less tense, and no tumour of the spleen could be felt; he vomited some clots of blood at midnight, and had many stools of thick and tar-like blood; tumefaction of belly subsided, but these copious evacuations produced much debility. Slight incoherency of speech was observed, and he was affected with anxiety and hiccup; some blood was voided daily by stool till the 26th.

On the 3d July he was beginning to recover his strength, and the stools were reduced to three daily; the spleen could now be felt, but exceedingly small compared with its former size.

He never recovered from the exhaustion of these repeated hemorrhages, but gradually sunk, and died on the 23d July, 1827.

On dissection, the spleen was found about double its usual size, and slightly indurated; the splenic vein was filled with an organised coagulum; part of which was traced extending along the porta into those branches which enter the liver; the porta was about half filled with this organised coagulum, and the other half was occupied by the ordinary recent coagulum which is found in the veins. A preparation of the part has been preserved. The liver was slightly indurated, and of rather darker colour than natural; mesenteric glands enlarged, and a few small grey tubercles in the lungs.

From the evidence contained in the foregoing pages, we see how great an influence the diseases of the spleen exercise on the human system, and what strong indications they afford for the ob-

servance of peculiar caution in the treatment of some of the fevers of Bengal; and in all those diseases which may be complicated with tumid spleen or its corresponding cachexia. On comparing the above account of spleen diseases with other maladies, we will be able to observe that the disorders most closely allied to *splenic cachexiæ* are, chlorosis, scorbutus, and some species of anæmia. The parallel of these diseases is so strongly marked, that I am surprised it should not have been generally noticed: the morbid condition of the blood is somewhat similar, the progress of the local inflammations and ulcers which occur during these diseases are alike difficult to manage; and similar remedies are found useful in these complaints.

NATIVE REMEDIES FOR SPLEEN DISEASES.

In a former paper, I had occasion to remark how seldom we saw diseases of the liver occurring in natives of Bengal. It is quite the reverse with respect to diseases of spleen, which are exceedingly frequent, tedious, and dangerous complaints among the natives of this part of India: arising often as idiopathic diseases, but in the majority of cases ascribed to fever, dysentery, or other debilitating disorders.

The mode of treatment requisite for cure of spleen disease of Asiatics, does not differ from that directed for Europeans; except that the same frequency and extent of depletion by bloodletting and leeches is not requisite: and in those cases where pyrexia does not exist, there is no need of such active purgatives as are advised for Europeans.

In some natives of delicate constitution, who live on a very poor diet, the tumid spleen sometimes appears suddenly, unattended with any very urgent symptoms, except paleness and debility: these subjects will often recover, if they are allowed a small quantity of good food, and are made to take a dessert-spoonful of undiluted tincture of rhubarb early in the morning, and two ounces of infusion of cheraytta with 20 drops of nitric acid in the afternoon.

The following prescriptions are used by the natives of Bengal: and I have often tried them in cases of spleen disease of Asiatics, with benefit; though in the majority of cases their efficacy is very inferior to the Spleen Mixture. They may occasionally deserve a trial in Europeans, when we wish to vary the patient's medicine: and natives will frequently take these prescriptions with more confidence than European medicines.

A. — Sulphate of Iron, 4 grains. Garlic, 20 grains. — Aloes, 6 grains.

These ingredients are made into a bolus, which is repeated early every morning. Half this dose is given to a debilitated man; or to a woman; and a quarter to a child under 12 years of age. This is commonly used in the lower provinces of Bengal, and is often

very effectual. A small dose of castor oil, or Teori, (*Convolvulus Turpethum*,) is usually given every 5th day.

B. — Garlic 32 cloves, (about $\zeta vii.$.) Aloes one ounce. — Brandy two pints.

To be mixed and macerated in the sun for 15 days. Dose $\zeta ii.$ to $\zeta iv.$ twice a day for an adult, mixed with equal quantity of water. This is said to be best adapted for spleen cases attended with emaciation and diarrhœa. It generally acts as a diuretic and mild aperient.

C. — The same quantities of garlic and aloes, as above directed, are mixed in two pints of vinegar, and used after 15 days; in the same manner as prescription B. It is considered an efficacious medicine for those patients who appear stout and rather bloated, but are not suffering from diarrhœa or an irritable state of the bowels. It is less generally used than prescription B.

D. — Iron-filings, $\vartheta ii.$; Common oil of mustard seed, $\zeta i.$

These articles mixed and swallowed early in the morning; immediately after which a dessert-spoonful of the tincture of aloes and garlic (B) is taken undiluted: and the patient lies down on the left side for half an hour after taking the medicine. Before commencing these medicines the patient is purged with castor oil.

The use of this last prescription has in several cases of recent spleen disease, unattended with pyrexia, been followed by subsidence of the tumid spleen in very few days. The common oil of mustard seed of the bazars contains a portion of vegetable mucilage, in which a considerable degree of the pungent properties of the mustard are taken up; and with the aloetic tincture, the patient gets a tolerably strong stimulant dose in a small bulk.

The natives in some districts occasionally employ sulphate of copper, in such small doses as barely to have an emetic effect. I have given this remedy in doses of two, and four grains, in pills with equal quantity of Pill. Rhei Comp. Its efficacy seems to depend on its tonic and astringent properties.

In some emaciated patients who were taking the aloetic tincture, prescription B, the subsidence of the enlargement of the spleen was not followed by a restoration of health; the patients sunk into a state of marasmus and died. The morbid appearance connected with the spleen in these cases was a firm and broad adhesion of the great curvature of stomach to the contiguous part of the spleen, appearing like a broad flat band; the extension of which passed across the middle of the spleen, and was attached to the peritoneum, just inside, and above the cartilages of the ninth and tenth ribs, on the left side; so that the spleen was found to be slung up in its place: in such cases the whole peritoneal coat of the spleen was found thickened and opaque. I have, however, seen a number of obdurate cases of spleen disease of long standing permanently cured by persistence in use of prescription B; and in some of those which I had an opportunity to observe carefully, while under the influence of the medicine, there seemed a slight increase

of morbid sensibility on pressure over the spleen, and the patients complained of thirst, but had not other symptoms of fever. Hence it would seem probable, that in patients whose constitutions are not much impaired, the permanent cure of tumid spleen may be favoured by a slight degree of superficial acute inflammation affecting the peritoneal coat of that organ: the permanent contraction which follows the absorption of the coagulable lymph, effused during the inflammatory state, may tend to affect a permanent cure of the tumid spleen, in a manner somewhat analogous to the permanent contraction produced in the gall-bladder, as a remote consequence of slight superficial inflammation, which is alluded to at page 238. This opinion is supported by the fact, that appearances of superficial inflammation very rarely exist in those cases of great tumefaction of the spleen which have not been cured: while on dissection of subjects who had for many months or years suffered from enlarged spleen, and who had recovered from that complaint, and enjoyed good health for years afterwards, some vestiges of previous inflammation have been noticed. I have observed these adhesions, (giving the appearance as if the spleen were slung up in its place,) so frequently after stimulant treatment employed in chronic spleen disease, that I do not hesitate to refer these appearances to the effects of the remedies employed.

Long needles are said to be used by native practitioners to puncture the spleen: and if they ever penetrated to the diseased organ, and a cure succeeded, it is very probable that the successful event might be ascribable to the peritoneal inflammation excited at the diseased part. I have seen them use needles, but so short, that I am quite certain the surface of the spleen was never touched in any of the operations which I witnessed. However, as they operate with the acknowledged intention of puncturing the spleen, it is probable that the use of needles for such purpose is founded on practical acquaintance of the benefits to be derived from such operation when more effectually done. And it is possible that the benefit which is derived from it may depend on a degree of local inflammatory action being followed by an effusion of lymph, which on absorption effects a permanent decrease of the spleen. I have in chronic cases inserted 2, 3, or 4 needles, deeply into the substance of the spleen: the needles were introduced exactly two inches, and no unfavourable symptom has ever followed the operation: the effects were deemed by those gentlemen who witnessed these operations useful in accelerating the absorption of the enlarged spleen; but the patients were at the time taking the usual remedies. Two men now in Hospital, Pereira and Guthrie, have each had the spleen repeatedly and deeply punctured: they are recovering, and I think the spleen in each has diminished more rapidly since the operation than for 3 or 4 weeks previously. We have yet to ascertain at what stage of the diseased spleen the affected organ is likely to derive benefit from being punctured by needles. In some periods of the early stages of the vascular en-

gorgement, we have reason to believe that adhesive inflammation, or a healthy process is not very likely to follow local injuries, by operation, or otherwise. The natives of this country generally use remedies in disease from practical knowledge of their efficacy, without much reasoning : therefore I would not reject any of their therapeutical expedients as despicable, without an enquiry into their *modus operandi*, and an experimental investigation of their utility. I have repeatedly seen native practitioners apply the actual cautery* over the region of an enlarged spleen. Were it not for the pain, as well as cruel appearance of burning, I could recommend the moxa to form an issue.

EFFECTS OF MERCURY IN DISEASES OF THE SPLEEN.

Patients who are suffering from enlarged spleen are generally liable to be affected in the most unfavourable manner by mercury : and this is more particularly the case with pale and leucophlegmatic subjects, who are labouring under the early stage of vascular engorgement of that organ. In fact, the extreme debility, depression, and exhaustion, produced by mercury in most cases ; and the premature salivation, destructive ulceration, and horrible sloughing of the gums, lips, and cheeks, which frequently take place in consequence of the administration of small quantities of mercury, are so shocking to contemplate, that the treatment of the endemic spleen disease of the lower provinces of Bengal should never be spoken of without a preliminary caution respecting mercury. The state of constitution rendering the use of mercury improper in this disease, seems to depend on some condition of the solids or fluids, or of the vital actions superadded to that state which is generally denominated debility : for mercury does not produce such evil effects when given to patients who are debilitated in consequence of hemorrhages, or of acute diseases. Whatever may be the essential condition of constitution, on which the destructive effects of mercury depends, the frequency, nay almost certainty of those effects in greater or less degree, whenever mercury is used during the existence of vascular engorgement of the spleen, cannot be too strongly stated.

Ulceration and sloughing of the mouth, though prone to occur during spleen diseases, from slight local irritations of any sort happen much more frequently, and in more severe degree, after the use of mercury.

The disease of the mouth in cases of tumid spleen commences in various ways ; that most sudden in its origin, and most rapid and destructive in its progress, begins with ulceration and slight tume-

* The cautery was used by the Arabian physicians for the cure of obstinate spleen disease. See Albucasis, vol. i. sect. 30, Oxford edition, 1778, where the forms of the cauteries, and the mode of using them, are described.

faction at the orifice of the parotid duct ; the aperture of which becomes obstructed by the swelling, while the ulceration at its termination permits the saliva to be injected into the cellular structure of the cheek. A glossy, semitransparent swelling will then form, nearly half the size of a small orange, in the course of one night. The cheeks and forehead become hot, and inflammation takes place, attended with low fever : the internal ulceration increases, and if the patient survive four or five days the cheeks mortify and falls out : so that the back teeth are bare, and this horrible sloughing ulcer allows us to see into the throat. In other cases that are usually more protracted, superficial ulceration of the mucous membrane of the mouth extend slowly, until it passes over the red part of the lip ; and soon after reaching the external skin an inflamed patch forms, which becomes in a day or two black, and the mortified portion is thrown off, uncovering the front teeth : the event of such cases is generally the destruction of life. In still slower cases, the gums ulcerate slightly, while an extensive separation of the periosteum of the jaw bones takes place, and is followed by caries of the bones of the face : many of the teeth fall out, and extensive exfoliations of the jaw bones happen in these patients. Even after this destructive process some persons recover ; and live for many years examples of the evil effects of injudicious use of mercury. In some of these unfortunate cases the tongue adheres to the inside of the lower jaw bones, and cannot be protruded beyond the points of the few tottering teeth that remain. In others, the jaws are permanently closed to such degree that solid food cannot be used, and speech is much impeded. It is not among the indigent classes of society alone that these misfortunes happen, where they might be ascribed to the patients' poverty, and negligence of themselves ; but they are liable to occur, and do occur among the most opulent, and to those who are provided with every domestic comfort, if mercury be carelessly exhibited during the unfavourable state of constitution that attends splenic cachexia. These people also often become permanent valetudinarians for life from rheumatism and general debility, in consequence of the excess of mercury, whereby the mouth and teeth suffer in the first instance : but many die from the debility produced by mercury before ulceration of the mouth takes place. These evils from the excess of mercury are infinitely more rare where the spleen is not diseased.

The best treatment for these lamentable cases is to obviate as far as possible every sort of local irritation, and to arrest ulceration by use of mild astringent washes for the mouth and gums ; the most useful of which, is composed of

Spirit. Camphoræ, Tinct. Catechu, āā ℥i. ; Tinct. Rhatani. ℥ii. misce. A dessert-spoonful to be mixed with a tumbler of tepid water, to wash the mouth every three hours.

One of the greatest and most permanent causes of irritation is the pressure of the teeth against the swollen and irritable membrane lining the inside of the cheeks. To remove this I usually

direct the patient to keep a piece of folded soft rag, wet in a weak solution of sulphate of zinc, always placed between the double teeth and the inside of the cheek. The medical treatment should be such as is suitable in sloughing ulcers of debilitated subjects. The Spleen Mixture should be given once every day, early in the morning; and quinine in solution, at noon, with the addition of the compound tinctures of bark, cardamums, and gentian, each \mathfrak{zss} . for an adult; and at bed-time a dose of quinine in solution, with as much acetate of morphia or black drop as shall procure rest. The diet should consist of a small quantity of good soup, and a glass of port wine at noon; and if the patient be able to eat meat, a small quantity of roasted meat or of mild curry, in the afternoon, with repetition of the port wine. Tea, sago, and bread, night and morning. When the sloughing inside the cheek is commencing, it may in a few cases be checked by one application of undiluted nitric acid to the part.

It sometimes happens that the spleen becomes suddenly enlarged during the progress of fevers, in patients whose constitutions have suffered from the influence of this climate. If these patients should be using mercury at the time, it must be immediately omitted; and should they have already taken a considerable quantity of calomel in the previous stages of the fever, their cases are most unfortunate; for the majority of such patients as do not fall into an incurable state in consequence are almost certain of a tedious and imperfect convalescence. In these diseases we have nothing to regret in giving up the use of mercury, for that medicine is useless in cases of fever connected with vascular engorgement of the spleen; and the other resources against fever must be relied on.

Several years ago I undertook an inquiry relative to the remote effects of calomel, on patients who used that remedy for fevers at the same time that they were affected with spleen disease. I allude particularly to patients who had taken calomel at the commencement of fevers, before it was discovered that the spleen was affected. A most patient and prolonged investigation was pursued relative to numerous such cases; in many of which I ascertained the state of health above 18 months after mercury was used, and compared the reports on their condition with the state of patients who had suffered from spleen disease attended with extreme degree of impaired health, but used no mercury. I found that those patients in whom mercury had been administered during the existence of spleen disease almost always had the health permanently impaired; in fact, a large number of them might be said to have broken and ruined constitutions: while those who were treated for similar diseases without the use of mercury almost invariably recovered good health in Bengal.

It is very difficult to treat cases where enlargement of the spleen from vascular engorgement coexists with enlargement of the liver and biliary congestion; I have been frequently induced in such diseases to try the cautious administration of mercury, but found

sudden and extreme exhaustion of strength, with ghastly and sunk countenance, to be produced by small quantities of calomel or blue pill. Not only have the effects of mercury in such cases been evinced by dangerous debility, as an early consequence, but the influence at remote periods has been equally to be regretted. The disease of the spleen in these patients has been exceedingly obstinate and in some instances intractable; as the following examples will show.

OBS. XL. — John Hewett, *ætat.* 27. Had ague one month at Arracan, and on his return was received into Calcutta General Hospital, on the 16th December, 1825, having then an enlarged spleen. The whole belly was very tense and full, skin dry, tongue white and moist, countenance of an unhealthy, lurid, cadaverous aspect, and there was bilious discoloration of the surface. He was exceedingly weak, though not much reduced in size. The spleen mixture was administered daily, but not producing sufficient purgative effect, pills of extract. *Colocynth. Comp. grs. iii.* — Camphor. — Pulv. *Ipecac. aa gr. i.* were added, after which he had four stools daily.

Nevertheless, the enlargement of spleen and general tension of the belly continued. The bilious tinge of the skin was unabated, the urine was high-coloured, and he had pain in the region of the liver; there was also a severe cough attended with viscid mucous sputa. These indications of biliary accumulation and disorder induced me to prescribe Calomel. — Pil. Hydrarg. — Pulv. Antimon. — Extract. *Hyoscyami. aa grs. v. mane et vesper.*

In three days the mouth became affected, the cough decreased and in a few days ceased entirely, the bilious tinge of countenance and other symptoms referrible to disorder of the liver were diminished, but the spleen remained large. At the same time when the mouth became affected, extreme emaciation suddenly took place, attended with increased debility and exhaustion. The mercury was omitted, and nutritious diet with wine was requisite to prevent his dying from debility. He was very weak for a long time, and some yellowness of face remained. He was able to proceed up the river in a boat to Ghazeepore, on the 19th January, 1826; considerably better, but still much reduced.

This man suffered from ague, with pain in the side and enlarged spleen in October and November, 1826. By the kindness of Dr. Daunt I had an account of his state of health so late as 30th April, 1827, up to which time he had suffered frequently from dyspnoea, and an irregular state of the bowels, but was not considered unfit for military service.

OBS. XLI. — W. Hoy, *ætat.* 28, a very pale and weak young man, had intermittent fever for 35 days at Arracan, where he was salivated. On his return from thence, he was admitted into General Hospital on the 16th December, 1825, suffering from a large spleen, general tension and fulness of belly, cough and intermittent fever of tertian type.

R. Scammon. Gummi-resinæ; Ext. Colocynth. Comp. āā ʒi.; Saponis Duri — Cambogiæ, āā ʒss. misce et divide in Pil. No. xxx.

Liquor Arsenicalis was given daily, and he took two or three of these pills every night, so as to be freely purged.

No benefit was derived from this treatment, therefore he commenced on the 18th December to take one ounce of the spleen mixture three times a-day, and persisted in its use until the 23d. He was then not any better, but suffered from frequent attacks of vomiting, his urine was at times very high-coloured, skin and eyes bilious.

R. Calomel.; Pulv. Antimon.; Pil. Hydrarg.; Extract. Hyoscyami āā gr. ii. misce fiant Pil. ii. To be repeated night and morning daily.

Only four doses of these pills were taken, when a most remarkable degree of debility was quickly produced with very sunk anxious countenance: the mouth was slightly sore. The teeth had been loose ever since the former salivation at Arracan.

A very liberal use of wine was requisite for many days to save this man from sinking. Various remedies were afterwards tried without effect: the spleen remained large.

On the 10th March, there was a bilious appearance of face, and high-coloured urine to such a degree, that I was induced to try the blue pill, but after taking two doses of five grains each, there was great increase of debility, with such a lank and sunk countenance that the pills were omitted. This patient's skin was certainly clearer, and he felt better after the debility had in a degree subsided. He became stronger, and had a healthy appearance. But although he remained above four months in the hospital the enlargement of the spleen could not be reduced.

OBS. XLII. — A slight made man, aged about 47, who had enjoyed tolerable health in India for many years, suffered from dysentery and remittent fever for several weeks in autumn, 1824, at a station which was remarkably unhealthy during that season. He used a small quantity of calomel, (he said the whole that was taken in the course of several days did not exceed 24 grains,) which moderately affected his mouth, and he came to Calcutta for change of air. I saw him the day after his arrival. He was emaciated, had an enlarged spleen and general tension of the belly; the right cheek was enormously swollen, hard and shining; he ascribed the swelling of the cheek to cold during his journey to Calcutta. There was a dreadful mercurial odour from his mouth. Mortification took place in the tumour of the cheek, and in spite of every remedy that could be suggested he died in six days.

OBS. XLIII. — John Wilson, ætat. 40, a slight made man, resident in Calcutta, was attacked with fever, not preceded by rigor, on the 20th October, and admitted into the General Hospital on the 24th October, 1825. He was bled to ʒi. and took Calomel. grs. viii. followed by Pulv. Jalap. C. ʒi., and a warm bath was used. The bowels were afterwards kept open by Ext. Colocynth.

Comp., for four days. At that period he had a dry skin, and brown but moist tongue. Was ordered to take Extract. Colocynth. Comp.; Pil. Hydrarg.; Pulv. Antimon. āā gr. ii. This was repeated three times on the 29th October, once on the 30th, and once on the 31st. Several days afterwards a slight mercurial fœtor of the breath was observed; but it gave no uneasiness and attracted no particular attention. The soreness of the mouth went on increasing till the 20th November, and then a slight superficial ulceration had extended round the right side of the upper lip, for which alum-wash was used, and his bowels kept open. The face up to this time had not been much swollen, nor the salivation considerable. On the 24th, he was very low and weak, with a feeble pulse, and mortification of the lip had commenced. He stated that he had been seized with pain in the spleen during the night; this was the first time that he had complained of pain in the left side.

He was ordered to take decoction of bark, compound tincture of bark and acids; under which the constitution seemed to rally; but the mortification extended, and the whole right side of the upper lip was destroyed quite up to the nose. He died on the 23d December.

On dissection, the spleen was found enlarged and soft, like a coagulum of blood in a cyst. The liver was dark-coloured and harder than natural. The gall-bladder was contracted, and not larger than the end of the little finger; it contained some green gelatinous fluid.

OBS. XLIV.—A poor man who had been exposed in an unhealthy and low situation, suffered from remittent fever and enlarged spleen in July and August, 1824. He said some calomel was taken, with other purgatives. I could not ascertain the exact quantity of mercury that was used. A dreadful salivation followed, with sloughing of the gums and destruction of the teeth, and part of the alveoli of the jaw-bones. He gave me fourteen teeth and several portions of the jaw-bones; some of the latter are above two inches long. This poor fellow still lives, a melancholy example of the baneful effects of mercury, in cases where men are labouring under the constitutional affections that generally attend vascular engorgement of the spleen. These teeth and portions of the jaw-bone are still in my possession.

It might appear unreasonable to ascribe the rapid increase of debility in some of these cases, and the extensive destruction of bone as well as of soft parts, to the small quantities of mercury used; but a multitude of facts might be adduced, showing similar consequences from the use of small quantities of mercury; in fact such evil effects might be stated almost invariably to follow, when much mercury is used during the early stage of tumid spleen in the lower provinces of Bengal.

It is important to inquire, how soon after the subsidence of tumid spleen calomel may be employed without hazard in case a patient

recently recovered from spleen disease should suffer from any complaint urgently requiring the use of that remedy. I have some reason to believe that mercury may be employed without danger after the subsidence of tumid spleen, when patients have recovered from the debility which usually attends that disease; provided the functions of the skin are restored, and there is a return of red blood in the capillary circulation on the surface, and a healthy degree of vascularity of the lining membrane of the palpebræ.

The chronic enlargement of the spleen, if left without medical treatment, often remains for many months, or even for years; and in a few of such protracted cases, the constitutional symptoms begin to abate while the tumefaction of the spleen remains. In these cases, if mercury should be requisite in the treatment of any particular disorder that may supervene, we occasionally see that medicine given, without those destructive consequences before described; but no beneficial effects on the diseased spleen ever arise from the use of mercury, even in the description of cases and at the stage of disease above alluded to. I ought to repeat, that all cases of spleen disease, where mercury has been employed during any stage of the complaint, are found to be very obstinate and intractable; and the instances are exceedingly rare, in which the effects of mercury are not evidently injurious.

OBS. XLV. — Craigie, ætat. 26, returned from Arracan in December, 1825, suffering from ague and enlarged spleen: the tumour in the left hypochondre was but little benefited by medical treatment, and he was sent for change of air up the river out of Bengal to Ghazeepore, where he did not recover. He returned to Fort William, an invalid, in December, 1826, having an enlarged spleen and general tumefaction of the belly. He was attacked with cholera, and then, besides other treatment, he took five scruple doses of calomel in 24 hours, and recovered from the cholera. The gums were affected by the mercury, but the spleen remained unchanged, and he did not suffer more from the calomel than a person of sound constitution would have done from a like quantity of that medicine.

OBS. XLVI. — Edgeworth, returned from Arracan in December, 1825; labouring under ague and enlarged spleen: he had been salivated. This man went to Ghazeepore for change of air, but the spleen disease resisting every remedy, he returned to Calcutta in November, 1826, the spleen being still large and hard, but not tender to the touch. Various remedies were administered without benefit, and afterwards he tried Extract Colocynth. Comp. — Pil. Hydrarg. — Extract. Hyosciami, ãã gr. iii. daily, for 14 days. The mouth was slightly affected, and no remarkable debility induced, but the spleen was not decreased in size.

In deciding on the nature of many diseases, we may easily avail ourselves of the accurate investigations of our professional brethren in other countries; and by comparing the character of each malady

here with that of its congener in a different climate, we are greatly assisted in forming a correct judgment. It is far otherwise respecting diseases of the spleen, for although many authors have taken slight notice of some of the diseases to which that organ is liable, we are up to this day without any extended pathological enquiries on which we can rely for practical information as to the safest and most successful plans of treatment for these diseases, it is quite certain that the modes of treatment ordered in modern systems of medicine are neither safe nor successful. The unconnected remarks of some authors, and the individual cases related by others, seem to be looked on as curious phenomena, not reducible to any rule, and hardly of sufficient importance to deserve consideration, or to afford any indications for guiding our practice. However, it does appear to me that many of the facts on record are of the highest importance, and as some of the works in which they may be found are obtained with difficulty in England, and are seldom seen in this country, I shall deem no apology necessary, while a few of such works are here noticed as tend to throw any light on the subject.

Besides those varieties dependent on the degree of intensity of constitutional and local disorder, some difference has been observed in the symptoms and termination of spleen diseases in remote countries; the principal modifications of which may be stated.

The tumid spleen of the English soldiers, contracted during a service of but few months in Walcheren, was observed in a considerable number of instances to go on to suppuration. In Dr. J. B. Davis's work on the fever of Walcheren and its consequences, published in London in 1810, forty-two cases are detailed in which the disease terminated fatally; of these, abscess of the spleen was found in cases 13, 20, 21, 26, 30, 35, 39, 42, and the spleen is stated to have been ulcerated in cases 14, 16, 24, 28, 36, 37, 40. Supposing Dr. Davis to have had care of the worst cases of spleen disease that returned from Walcheren, and that his dissection-reports were taken from examples of the most aggravated forms of the disease, this ratio of termination in abscess or ulceration surpasses anything of the sort on record that has come within my reach. Among the Walcheren cases, sudden death from œdema of the epiglottis was not rare; and instances of ulceration of the interior of the gall-bladder were noticed in some of the cases.

At this remote period it would be difficult to ascertain how far the frequent tendency to suppuration of the spleen and the very great mortality of the Walcheren fever may have been increased by the treatment employed. Dr. Davis states at p. 104 and 105, that his patients "were put upon a course of mercury which was continued for weeks."

Mr. G. P. Dawson, who published at Ipswich in 1810 a short account of the diseases of those who returned from Walcheren, bears testimony to the appearances of ulceration and abscess of the spleen observed in dissection. Œdema of the larynx and abscess of the parotids were among the untractable symptoms seen in his

patients. It is well known that at the worst periods of the diseases now alluded to, stimulants of wine and animal food were liberally used, and that a majority of the cases were treated with mercury in no very sparing manner: these facts have been put on record by those who were employed in the Hospitals on that occasion. See *Dr. Thomas Wright on Walcheren Remittent Fever*, p. 106 and 144.

By the accounts of Juncker, Kramer, and others, spleen disease seems to be a frequent attendant on the remittent fevers in low and swampy parts of Hungary; but in the majority of cases the visceral enlargement appears there to have been a slow disease, very often attended with dyspepsia; cough and other indications of pulmonary disease were occasionally present.

I have seen some patients from Demerara with cachexia and less palpable tumefaction of the spleen, in whom distressing dyspnoea with bloated swollen face, and the essential characters of anæmia were most strongly marked. Less distinct symptoms of spleen disease have been noticed in some other countries.

Wherever diseases of the spleen have existed, and a careful record of their nature, progress, and termination can be obtained, with an account of the treatment that has been employed, the injury done by the exhibition of mercury in the majority of cases has been acknowledged by those practitioners whose attention has been particularly directed to the subject; but in general the established belief of English practitioners that calomel is the best remedy in all visceral obstructions, has caused the evil effects of mercury in spleen diseases to be overlooked; the injury done by mercury being usually imputed to the inevitable course of the disease, and not to the treatment. One man may say he orders mercury *as an alterative*; another may administer it *as a purgative*; but the destructive effects of mercurials in cases of splenic cachexia are not modified by the intention of the prescribing physician. As far as we can judge from the observations of authors who have paid particular attention to the class of diseases now under consideration, there appears to have been a remarkable uniformity in the evil consequences which have followed the use of mercury in these diseases: in this assertion I am supported by the accordance of facts observed in different parts of the world, too numerous to allow any room for doubt on the subject.

In a Dissertation, *De Splenitide Chronica*, published at Berlin, in 1825, by Dr. Joan. Augustus Leue, the author says, “salivatio mercurio orta, omnia morbi symptomata valde auget;” and in detailing the case of a woman, 24 years of age, who suffered from obstinate disease of the spleen for many months, we find the following statement: — “Calomel quod hucusque nondum adhibueram, veritus, ne salivatio paucas doses sequeretur, nunc die 21 Decembr. præscribere ausus sum (Calomel. gr. i. Magist. Bism. gr. i. c. sem. Tinc. Op. simpl. gtt. i.: ter vel quatuor quotidie assumendum).”

“Primum hoc remedio cardialgia valde imminuta est, sed jam tertio die salivationis prodromi apparuere, sex granis mercurii

assumptis. Hoc igitur remedio statim omisso tamen ægritudo nunc duplicem vigorem obtinuit, ventriculi tormina et omnia splenitidis symptomata in gradum insolitum accrevire, cum virium prostratione maxima, febre, capitis gravedine et fere omnium corporis partium doloribus. Os multa aqua, in qua salvia decocta sit, fovere jussi et flores sulphuris præscripsi. Die 29 Decembr. ægrotam sudore perfusam inveni, quem morbi levamen secutum est. Abhinc salivatio, quæ omnino modica fuerat, sensim decrevit, atque simul cetera morbi signa."

In the fourth volume of Dublin Hospital Reports, there is an excellent Essay by Dr. Cumming, on the Cancrum Oris, which appears frequently in unhealthy seasons among the children of poor people in some districts in Ireland. The symptoms described by Dr. Cumming correspond exactly with the characters of the splenic cachexia of Bengal; and among the few dissection reports given by the author, we find that disease of the spleen is noticed. A relation between the constitutional disorder, the tumid spleen, and the ulcerated mouth, or the remote influence of those morbid phenomena on each other, does not seem to have been suspected. His patients appear to have been the ordinary pauper applicants who are seen in Dispensary practice. It would have been interesting, if possible, to have ascertained whether these children had been previously ill of fever, and if calomel had been freely administered to them during the course of that disease. Dr. Cumming alludes to the opinions of some physicians on the spot, who ascribed the ulcerated mouth to the influence of calomel.

In Mr. G. P. Dawson's observations on Walcheren Diseases, page 32, the author "denies that mercury was useful in the Walcheren fever, and affirms that its exhibition was often attended with injury. There were visceral diseases in many cases, particularly of the spleen, yet mercury produced no good, but harm. Four, five, or six mercurial frictions, or a few small doses of mercury, generally produced the most dreadful salivation, which made death by suffocation not a very improbable event." Mr. Dawson says, "the practice with mercury was little used in his Hospital, in which there were more instances of recovery, and fewer deaths than in any other. The spleen was found diseased in almost every case, weighing from three to five pounds. The face was yellow, cheeks hollow, and eyes sunk, and all was despondency and distress." p. 48.

The evil effects of mercury during the existence of spleen diseases, it also mentioned by the following writers in the Medical Journals:—Dr. Abercrombie, in vol. 22 of the Edinburgh Medical and Surgical Journal; Dr. Vetch, in the London Medical and Physical Journal, vol. 51; Mr. Henderson, in the Edinburgh Medical and Surgical Journal, No. 84; Dr. Crane, in the Edinburgh Medical and Surgical Journal, No. 75, page 243.

I may be excused for earnestly pointing out the evils caused by mercury in diseases of the spleen, particularly in that state which

I have denominated vascular engorgement ; and in fevers complicated with tumid spleen : because the practical instructions laid down in the best systems of medicine of the present day, do not inculcate the avoidance of mercury in any cases of enlarged spleen. On the contrary, the use of mercury is recommended for the cure of spleen diseases in works which are at present in high estimation, among which I may specify the following :

In Dr. Good's Study of Medicine we are told that the treatment of diseases of the spleen should be the same as that ordered for diseases of the liver. The functions and diseases of the spleen are treated under various heads in that excellent work ; but no allusion is made to the injurious effects of mercury in any modification of tumid spleen. — See 2d edition, page 484, vol. i., and pages 442 and 434, vol. ii.

The same sort of treatment for diseases of the spleen, as is applicable to the various stages of diseased liver, is recommended in Dr. Philip Wilson's work on Febrile Diseases.

Dr. Thomas, in his Practice of Physic, p. 192, orders "in the acute state of spleen disease, frequent purging with calomel and jalap, besides other antiphlogistic treatment." And in "*enlargement, induration, or scirrhus*," he says, "we must employ mercury, both as a purgative and deobstruent, in the manner advised for inflammation of the liver."

Much the same sort of treatment is recommended by Cullen ; as well as in the Edinburgh Practice of Physic, and several other medical works. Pemberton on the Abdominal Viscera, advises mercurial frictions, and small doses of calomel, with extractum conii, till the mouth be slightly affected. The mercurial treatment advised by Dr. J. P. Davis is already stated at p. 328.

I will only add one reference to a recent work, which is likely to lead inexperienced persons in this country into errors of practice the most destructive to human life. I allude to Mr. Annesley's work on the Diseases of Tropical Climates, in which the free use of mercury is ordered as a general practice in diseases of the spleen. In vol. ii. page 5, "in cases of simple tumefaction, without inflammatory action, a full dose of calomel at bed-time, and a purgative in the morning, are advised to be continued daily, or on every other day, according to the circumstances of the case ;" and at page 6, he says, "in congested or tumefied spleen, after having given two or three full doses of calomel, or of calomel and opium, at bed-time, we should adopt with much benefit the blue pill and the aloes and myrrh pill, giving them every night, and the full doses of calomel every third or fourth night only." I am obliged to express my disapprobation of the above instructions, in the strongest terms : and trust I may do so, without deviating from the respect which is due to Mr. Annesley's high situation in the service, and to the industry he has evinced in professional pursuits.

It is probable that fevers similar to those which occurred among the military at Walcheren, at Arracan, and after the retreat on Corunna,

will always be remarkable for a large proportion of fatal cases, under any mode of treatment. The majority of such fevers, at a late stage, and many of them even at a very early period, are attended with enlargement of the spleen, and with the cachexia which usually accompanies the tumid state of that organ, wherein mercury is proved to be injurious. It would seem important in all such diseases in future, to trust to V.S. and the general employment of the antiphlogistic treatment at an early stage, and the use of mild purgatives and quinine, with bitters and tonics at a later period, without giving any mercury in cases where enlargement of the spleen exists, or the constitutional symptoms of splenic cachexiæ are strongly marked.

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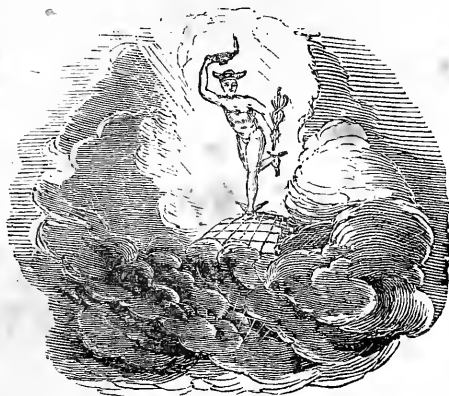
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